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NOVEMBER, 1899

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The Future of the
Ontario Association
of Architects.

In view of the near approach of the annual convention of the Ontario Association of Architects, the present seems an opportune time to say a few words regarding the present and future status of that organization. It will scarcely be denied by the most ardent friend of the Association that it lacks the life which should characterize every individual or organization having in view the accomplishment of a definite and useful purpose. Neither will the proposition be disputed that where advancement ceases retrogression begins. Can it be said that advancement has marked the recent career of the Ontario Association of Architects? If not, it follows that a retrograde movement has already commenced, and therefore prompt and earnest consideration should be given to the means best adapted to place the Association on a satisfactory basis. With this object, and acting in accord with the expressed wish of some of the most active members and well wishers of the Association, we recently invited from leading architects of the province answers to a series of questions, and suggestions which it was hoped might prove helpful to the management of the Association in dealing with this important problem. The questions, with the replies received, are published in this number.

The conclusion deduced from a somewhat careful

consideration of the subject is that the greatest drag on the progress of the Association is the incompleteness of the Ontario Architects' Act. The Act in its present form imposes upon the Association the necessity of maintaining examinations for students without placing students under obligation to present themselves for examination. It stipulates conditions which must be complied with by persons seeking to become members of the Association, but refuses to give to such persons the exclusive right to use the title "Architect." About the only advantage which the Act affords is that entitling registered architects who may be called on to give expert evidence in the courts to charge the same fee as a provincial land surveyor. This privilege, while perhaps of some value, is more than offset by the disadvantages which the act imposes. Some of the brightest young men in the profession are prevented by the terms of the Act from joining the Association and giving it the benefit of their ideas and efforts. The government has established and is maintaining at considerable expense a Department of Architecture in connection with the School of Practical Science Toronto—with what result? To give instruction to one or two students each year. If the government would amend the Ontario Architects' Act by restricting the use of the title "Architect" to properly qualified persons, and making it compulsory on students to pass the prescribed examinations, the attendance and results in this Department would shortly be more in keeping with the cost of equipment and maintenance.

In view of the hampering effect of the Act in its present form, should not the Association without further delay make one more effort to induce the government to grant the required amendments, and failing to obtain them, abandon its charter and seek to establish itself on a new basis, which would permit of its affairs being conducted in the manner best calculated to increase the number and interest of its members and enhance its usefulness? The Association cannot become a permanent success unless means can be devised of bringing into sympathy with it the rising generation of architects. Whether the amendments to the Ontario Architects' Act are granted or not, the Association should endeavor to establish—by means of monthly lectures or in some other way—means for the education of students, thereby exhibiting in a practical way its interest in their welfare. At present the students are asked to pass the examinations, but the educational means to that end are wanting.

Competitive Designs for Public Buildings.

THE new post office building at Chicago, the laying of the corner stone of which was recently made the occasion of a brilliant ceremony, is the first government structure to be designed by an architect in private practice, under the recent enactment which provides that designs for the more important public buildings of this character may be procured by public competition. Mr. Henry Ives Cobb, the architect of this building, contrary to past custom, was given prominent recognition at the public ceremonies. In view of the part taken by the Premier of Canada in the Chicago ceremonial the present might be an opportune time for the Canadian architectural associations to urge upon the Dominion government the adoption of the American system of inviting

from the leading architects of the country competitive designs for important public buildings.

It is proposed to organize in Great Britain a National Conciliation Board, to adjust by conciliatory means all questions relating to the hours of labor, rates of wages and working rules, and by mediation prevent strikes and lock-outs and assist in the settlement of disputes that may arise in the building trades. In addition to representatives from the various national organizations of employers and workmen there are also to be district committees.

University of California Competition.

THE awards have recently been made in the competition for designs for the University of California. The first prize, amounting to \$10,000, in addition to the customary architect's fees, has been awarded to M. Benard, of Paris. The other prizes have been assigned as follows: Howell, Stokes & Hornbostol, New York, \$4,000; Des Pardelles & Codman, Boston, \$3,000; Howard & Cauldwell, New York, \$2,000; and Lord, Hewlett & Hull, New York, \$1,000.

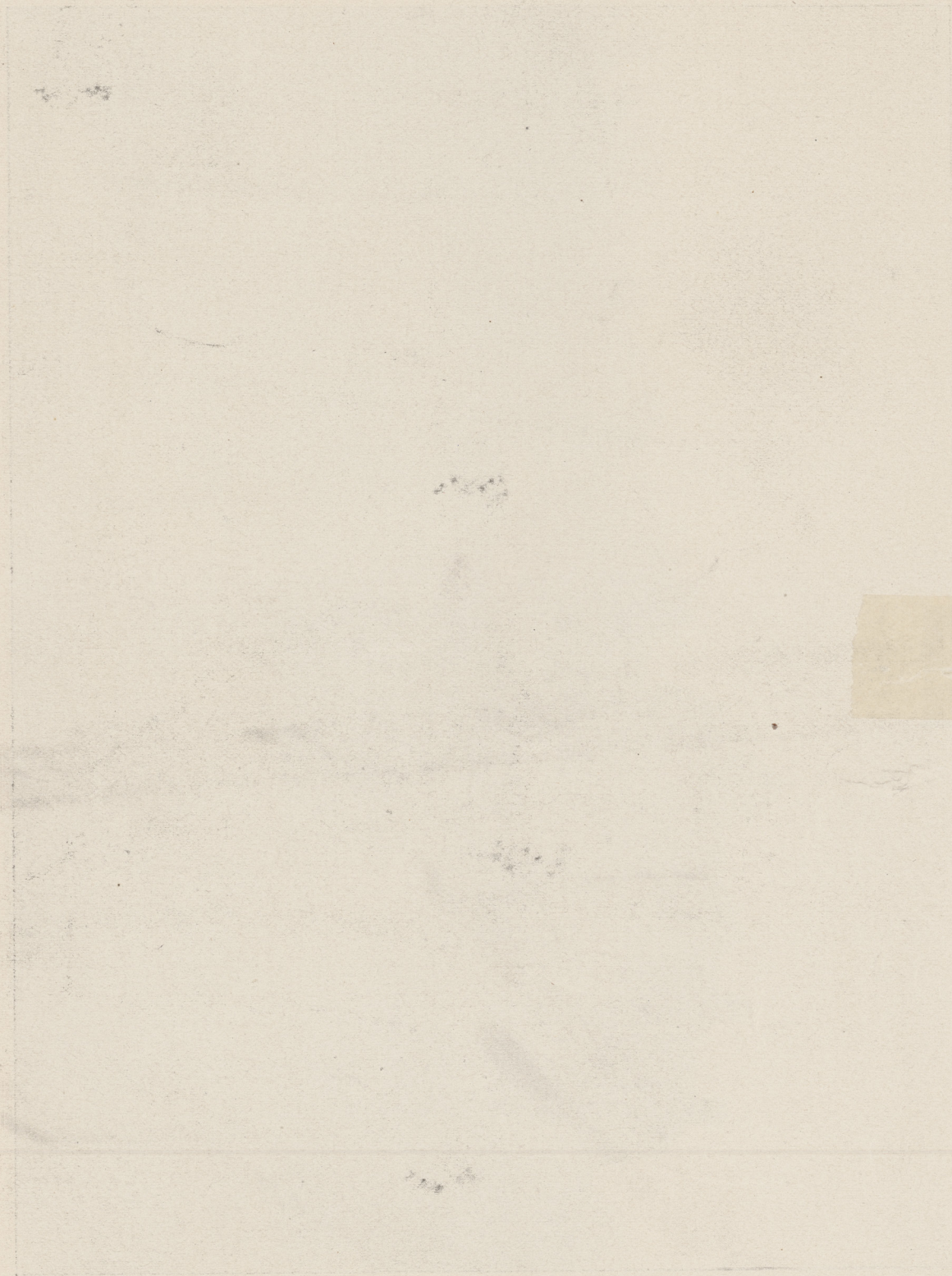
Toronto Municipal Buildings.

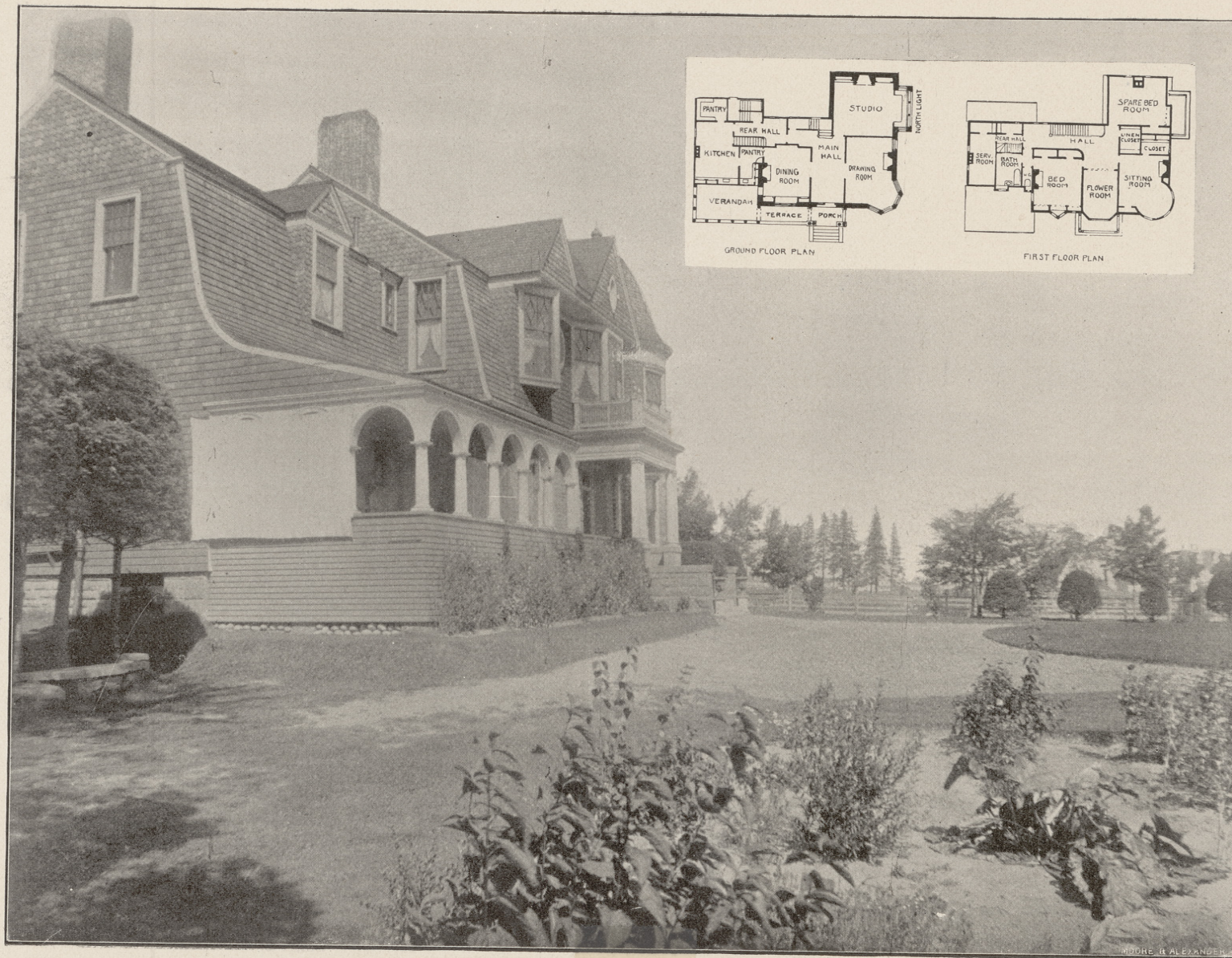
UNTIL a few days ago we entertained the belief that the county of York had agreed with the city of Toronto to pay interest on a sum not exceeding \$400,000 as its proportion of the cost of the new municipal buildings. In this, however, we were mistaken. The fact is that the county authorities agreed to pay interest on about \$80,000, 20 per cent. only of the above mentioned sum. On this small proportion of the cost of the building they want to be charged only $3\frac{1}{2}$ per cent. Some of the most important departments of the city government, claim that the portion of the building which has been set apart for the use of the county, is fitted up in a much more elaborate and costly manner than the apartments which are occupied by the city. Complaint is already heard that the accommodation afforded by the latter is insufficient, and that no provision has been made for expansion. Under these circumstances no further concessions are likely to be made to the county, which has already secured the best of the bargain.

Proposed New Building By-Law for Montreal.

A FIRST instalment of the proposed new building by-law for the city of Montreal is printed in the present number. The remaining sections will appear in our December issue. This by-law was framed by a committee of the Province of Quebec Association of Architects, and was subsequently revised and approved by the Montreal Builders' Exchange and kindred associations whose interests would be particularly affected by its provisions, and also by a special committee of the Montreal City Council. Its preparation engaged the most earnest attention of the committee of the P.Q.A.A. for a year. It may therefore be regarded as the mature result of the inquiry and deliberation of men best qualified by training and experience to judge of the requirements. As such it should have an interest for architects, builders, owners of real estate and municipalities. The by-law is now under consideration by the City Council, whose approval is all that is now required to make it operative.

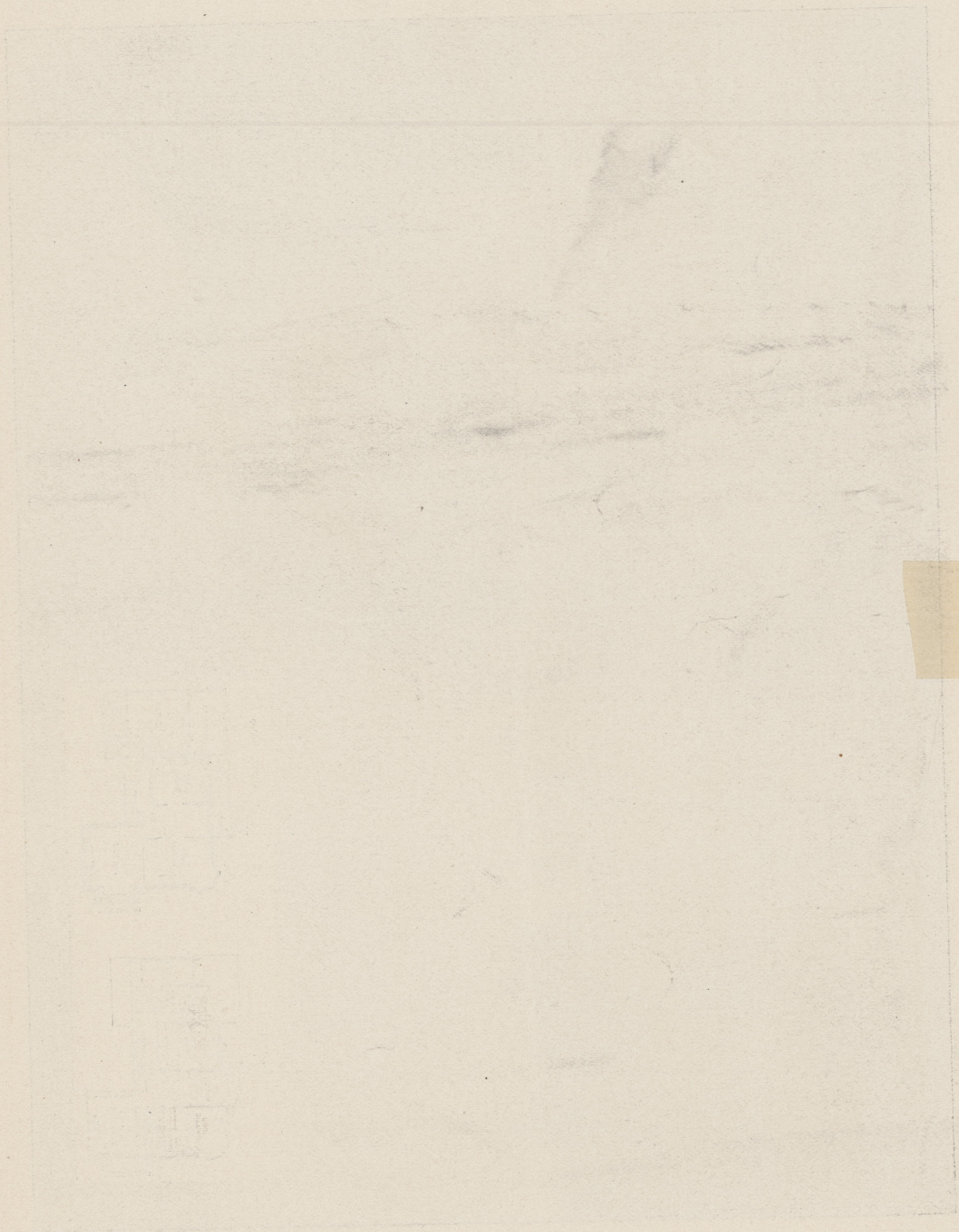




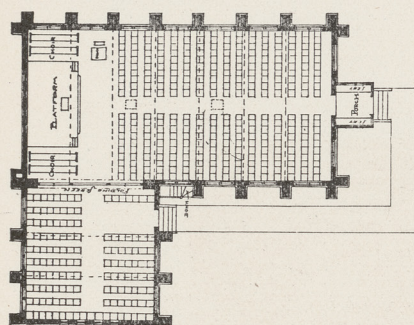


RESIDENCE OF MR. JOHN HAMMOND, ARTIST, SACKVILLE, N.B.

MESSRS. BURKE & HORWOOD, ARCHITECTS.



1870
JANUARY
1871



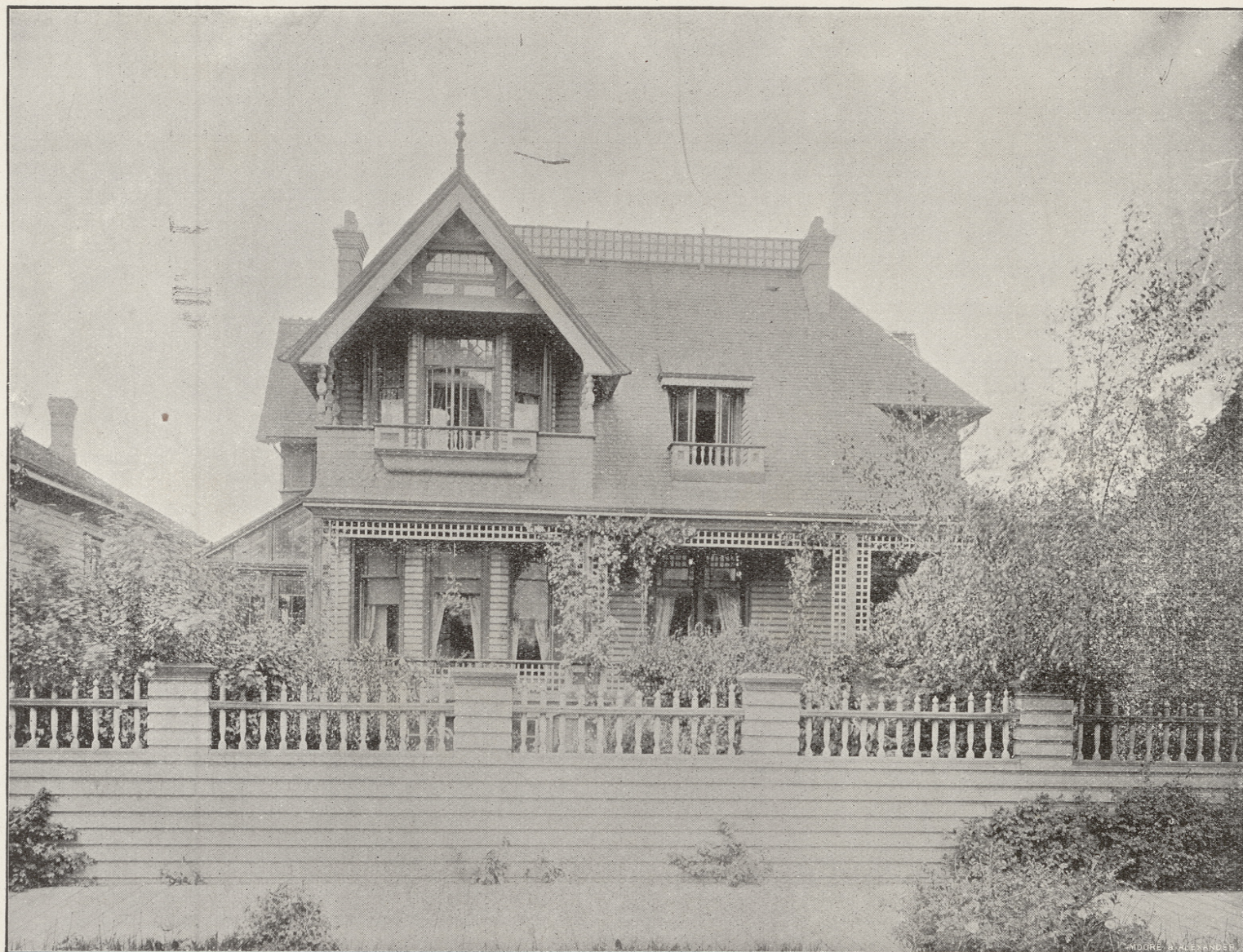
PLAN.

Scale - 1/4 inch = 1 foot.

New Methodist Church.
• Moose Jaw • Alta.

PERCY BRISLEY, ARCHITECT.
MOOSE JAW, AUGUST 1899.





RESIDENCE OF MR. T. C. SORBY, ARCHITECT, VICTORIA, B.C.

T. C. SORBY, ARCHITECT.

ILLUSTRATIONS.

RESIDENCE OF MR. T. C. SORBY, ARCHITECT, VICTORIA,
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SHOP FRONT, VANCOUVER, B. C.—R. M. FRIPP, F. R. I. B. A.,
ARCHITECT.

RESIDENCE MR. JOHN HAMMOND, ARTIST, SACKVILLE, N. B.
—BURKE & HORWOOD, ARCHITECTS.

The lower storey of the main house is built of an olive colored stone. The kitchen wing is frame on stone foundation.

The upper storey is frame covered with stained shingles. The exterior woodwork is painted an ivory white. The principal rooms on the ground floor are finished in hardwood.

The studio is a commodious room with a large brick fireplace, and wall space for painting large pictures.

Mr. Hammond has executed numerous commissions for the Canadian Pacific Railway Company, and is now at work on a large view of Nelson, B. C.

The studio fireplace gains interest in that it was designed by Sir Wm. Van Horne, who has for many years exhibited great interest in Mr. Hammond's work.

NEW METHODIST CHURCH, MOOSEJAW, ASSA.—PERCY
BEESLEY, ARCHITECT.

The new Methodist church at Moosejaw comprises a church 71 x 35 feet and school-room 32 x 30 feet; the church and school-room being connected by means of patent folding partitions, enabling each room to be used separately if required. The accompanying perspective view shows a building designed in the early English style of Gothic architecture, the materials used being red pressed brick and terra cotta, with Calgary stone for base and dressings. The roofs and bell spire turret to be shingled. Heating is to be by means of an improved hot air system. Ventilation on a new principle with air flues and inlet ventilators and foul air extractors in connection with shafts carried through the roof.

The floor will be laid to a slight gradient.

Top portions of all windows in small leaded squares.

The roof will be framed in the strongest manner with an open collar beam and elliptical framing to principals, supported on stone corbels. The whole of the work is being designed and carried out under the superintendence of Mr. Percy Beesley, architect, of Moosejaw, whose plans were adopted by the trustees of the church a few weeks ago.

NOTE.—In connection with the publication in the ARCHITECT AND BUILDER for October of designs for pavillions for the Paris Exhibition, it should have been stated that the buildings were designed by Mr. C. Clowes, Arundel street, Strand, London, W. C.

ENGINEERS' CLUB.

THE Engineers' Club of Toronto held its regular monthly meeting at the Rossin House on the evening of the 7th inst.

The following were present: Messrs. Canniff, Chewett, Chipman, Clement, Duff, Galbraith, Hanning, Hertzberg, Jennings, Smith, Speight, Spry, Stewart, Temple, Tully and VanNostrand.

The topic of discussion for the evening was "The necessity for a Topographic Survey of Canada." A congratulatory address to the Canadian Institute was adopted, the Institute having now been in existence fifty years.

The trunk sewer problem will be discussed at the next meeting.

PROPOSED NEW BUILDING AND FIRE
BY-LAWS FOR OTTAWA.

CONSIDERABLE interest has been aroused by the recommendations contained in a report of a special committee of the Ottawa Board of Trade for the amendment and improvement of the building and fire by-laws of that city. The report is as follows:

"The committee appointed by your board to examine the existing fire and building by-laws of the city of Ottawa, after due deliberation beg to report that we find the said by-laws, on the whole, incomplete and also very confusing in arrangement and not at all adequate to the demands of a city the size of Ottawa. The committee deem it advisable that the city council should have the by-laws revised by a committee of experts, and think that in such a revision the following recommendations should be given careful consideration:

1.—That the city should have a building inspector who should devote all his time to the work; he should be an expert in all departments of building construction; with him should be deposited plans of all parts of new buildings (or alterations, additions or repairs to old buildings) which are affected by the fire and building by-laws, and that he should be held responsible for all building inspection.

2.—That the provisions of the by-law respecting scaffolding should be made more clear.

3.—That the present fire limit A should be divided into two limits. The principal portion of this limit should comprise all the buildings and constructions on lots fronting on Wellington, Sparks and Queen streets between the canal and the west side of Kent street, and on both sides of Rideau street to Little Sussex street and on both sides of Sussex street to George street. This area being composed of the greater portion of the business part of the city, should, in our opinion, be governed by more stringent by-laws than those governing the rest or residential portion of the present class A. These by-laws should insist that all new buildings, constructions or repairs, etc., should be built throughout of brick and stone, protected structural steel or other non-combustible material, and that the walls of such buildings shall be regulated in thickness according to height, as provided by the schedule to the Metropolitan Building Act of London, Eng.

All beams carrying brick or stone walls should have fireproof protection. Every building should have a party wall for each 3,267 superficial feet area; and openings in such walls should be of regulated size and have fireproof doors on each side. Floors, ceilings and supports should be of non-combustible material; beam fillings should be insisted upon; joints should be filled in with mortar or other non-combustible material, and the spaces between joints blocked every few feet to stop drafts. Similar blockings should occur in the furrings when used. Stairs should be of non-combustible material. All supports, guides, framing and other work around elevators should be of metal. No outside cornice finish, sills or other work should be of wood; joints should have ends bevelled so that if burned the walls would not be wrenched by their falling. Sky-lights should be metal; party walls should be carried above the roofs; all chimney flues should have 8 inch casting, and proper construction of fire places and hearths should be insisted upon. Shingle roofs should be prohibited; all galleries or verandahs should be fireproof, and all cranes and hoisting jibs projecting from the face of any wall should be covered with non-combustible material.

4.—Any present existing building which does not comply with the requirements of this first class limit should not be allowed to be altered, but should be allowed to be removed, under proper restrictions, to a limit whose provisions it complies with. Any such existing building in this limit being damaged by fire to the extent of 35 per cent. of its value should be demolished. As to the other areas in the city, similar provisions of a correspondingly less stringent character should be adopted."

The recommendations contained in the report were discussed at a largely attended meeting of the Board of Trade, but action thereon was deferred. Some of the members declared that the adoption of such regulations would kill building operations, while others, including several of the prominent architects of the city and Mr. Surtees, late city engineer, asserted that they were such as should prevail in every modern city. The recommendations appear to be in line with the legislation adopted in recent years by leading cities of America.

Spasmodic advertising was never known to build up a business; continuous advertising has done it thousands of times.

THE O. A. A.—A SYMPOSIUM.

THE approaching annual convention of the Ontario Association of Architects will afford an opportunity, which should not be allowed to pass unimproved, to consider and adopt means of increasing the membership and usefulness of that organization. The prosperous conditions now prevailing would appear to make the present an opportune time for an effort in this direction.

Having in view this object, the editor of the CANADIAN ARCHITECT AND BUILDER solicited from leading architects throughout Ontario answers to the following questions, together with suggestions which might prove helpful for placing the Association on a more satisfactory footing :

1. In what directions might the efforts of the Association be most usefully and profitably directed ?
2. What can be done to increase the membership, and especially to bring the young men into the Association, and lead them to take an active interest in promoting its welfare ?
3. What can the Association do for the benefit of students which would be likely to meet with their recognition and appreciation, and advance the standard of architecture in Canada ?
4. What changes, if any, are required in the present policy of the Association and method of conducting its affairs ?
5. What would be the best means of bringing the Association and its work before public notice ?
6. Please state concisely any opinions or suggestions not covered by the above inquiries.

The following are the replies which have thus far been received :

TORONTO, Nov. 11th, 1899.

1. One of the ways in which the efforts of the Association might be most usefully and profitably directed is, it seems to me, in making the obtaining of the proposed change in our charter a live question on all occasions and at every opportunity,—especially when coming into contact with members of the local legislature,—so that an educative influence might be constantly exercised with a view to the cultivation of public opinion demanding the same restrictions in regard to architects as to physicians and lawyers.

2. This is a difficult question and may be taken as part of No. 4.

3. The reception of the efforts of the Association in behalf of students, has during the past five or six years, been so coldly received by the students themselves (with a few exceptions), that there is little encouragement for further effort.

Several of the busiest architects have spent a large amount of valuable time preparing examination papers for students who have been too indifferent, or lazy, to take advantage of the course of reading or study involved.

Many students have argued that the Association can do them no good and that the preparation for and the passage of these examinations, qualifying them to become members of the Association, is therefore useless trouble—forgetting that the study and discipline involved and the knowledge gained are alone quite worth the effort, and will amply repay from every point of view.

What, therefore, CAN the Association do under the circumstances ? It cannot COMPEL the students to take advantage of any serious effort in their behalf. The door to the practice of architecture must be put under guard before our students will be induced to wake up to their own good.

4. One of the changes required in the present policy of the Association, and which I advocated when on the Council, is the reduction of the running expenses. I think we are in such a position as to call for the very minimum of expenditure. To this end all services should be honorary till the revenue warrants greater expenditure. Till this change is made it will keep a number out of the Association. I do not think they are doing right in the stand they are taking, and think they should have remained in the Association, even when the hard times made the payment of the fees difficult. They could, by their presence and vote, have dictated its policy.

What we need is esprit de corps, an unselfish devotion to the interests of the Association, a willingness to sacrifice our time and abilities for its welfare, a resolve to put good active men into office and to stand by them loyally. These things alone will go far to make the Association a success. Apathy will kill it.

I am, yours truly,

EDMUND BURKE.

LONDON, Ont., November 11th, 1899.

In reply to your circular letter asking for opinions and suggestions as to means of increasing the membership and usefulness of the Ontario Association of Architects.

Adopting the premises that the Association might be "on a more satisfactory footing," the cause of not being on a satisfactory footing may be found in the constitution, members or management. It is not a simple matter for any one person to locate the cause, particularly if that person be not on the inside. And because I cannot speak with definite knowledge of the workings of the Association, it would not be well for me to give answers to the clauses that might be based on imagination rather than facts.

But in a general way I would suggest that there might be more confidence and fraternity between the members, fostered in local organizations having regular meetings and reporting to the general body or "Grand Lodge" at other regular meetings. To that end the province might be divided into Association districts. Some modes of well known fraternal societies might be enquired into. These societies are generally successful.

Above all there should be a more harmonious spirit—a common cause to which all may put a hand, pulling all together rather than each his own way. Without a common bond of good fellowship and confidence in leaders or officers no association, not even an association of architects, will meet with success.

Yours,

HERBERT MATTHEWS.

HAMILTON, Ont., November 6th, 1899.

SIRS,—In reply to the circular letter received early in the month in reference to means to be adopted for improving the Ontario Association of Architects, I have little to say.

Having previously made suggestions and been subjected to a cold water douch by members of the Council and the Registrar in consequence, I do not care about a repetition of the amusement.

I will, however, make one answer to your list of questions—the first one—asking "In what direction might the efforts of the Association be most usefully and profitably directed ?

My answer is : "In the direction of winding itself up and retreating at the earliest possible moment."

Yours truly,

R. W. GAMBIER-BOUSFIELD.

OTTAWA, Nov. 3rd, 1899.

Your vexed questions relative to O. A. A. are before me, but I doubt if I can help you ; however, here goes :

1. Inculcate its members with the necessity for professional etiquette. Institute a court or committee of enquiry, so that any case of unprofessional conduct of members may be dealt with and if necessary expelled from the society.

2. Keep down expenses and make fees as small as possible.

3. Worry the governments until a grant is made to assist students by establishing a school of architecture and fine arts with travelling studentships.

4. Am not posted upon the policy of O.A.A. Outside of seeking incorporation, did not know they had any.

5. By holding conventions in the principal cities, instead of confining it to Toronto, and allow members outside a chance to elect some of the officers, as it is now the outsiders are only a buttress to a Toronto society. In my opinion the society can never be provincial in its character until you hold your meetings outside Toronto, as the Toronto votes outnumber all the rest. I might cite the R. C. A., where the president lives in Montreal and secretary in Toronto.

Quebec Association is different, as there are no cities of importance outside of Montreal in Quebec province, their fourth largest city being only a suburb of Ottawa.

Local branches of O. A. A., if I may judge from Ottawa, will not succeed. We started a local society and failed. We made a lot of rules and by-laws which were broken ere the printer's ink was dry.

Yours truly,

JOHN H. W. WATTS.

TORONTO, November 10th, 1899.

SIR,—In reply to your questions—I am waiting, with interest, to know what the Council, which was specially charged with the consideration of means of placing the O.A.A. on a more satisfactory footing, will report as having been done and what it pro-

poses after a year of deliberation. It should make suggestions more valuable than those of an individual member.

In the meantime I give some brief answers to your questions :

1. All members should attend the next Convention and seek to make it a success.
2. Make concessions, as to examination qualifications, in certain cases, and aim at a new enrollment of the architects of Ontario on January 1st, 1901, the beginning of the 20th century.
3. Students in all cases should be bound to study for and attend the annual examinations.
4. More frequent meetings of the Association in Toronto and formation by the Association of chapters in other cities.
5. Public illustrated lectures, advertised and reported in the daily papers.

WM. R. GREGG.

OTTAWA, Nov. 10th, 1899.

GENTLEMEN,—Your favor of 2nd inst. re suggestions for improvement to the O.A.A. received.

Not being a member of the Association I do not care to criticize its affairs.

I might say the reason I am not a member is because I have never been asked to become one, and for architects outside Toronto I see little benefit in being a member, to compensate for the trouble of intruding myself on the society.

Yours very faithfully,

E. L. HORWOOD.

TORONTO, November 11th, 1899.

DEAR SIRs,—In reply to your favor of November 2nd asking an expression of my views on the subject of improving the condition of the Ontario Association, I give you the following in answer to all your questions :

1. The Association must realize its actual position and accept it.
2. It should be run on straight business lines and thus cause its members to give it active support.
3. Meetings should be monthly, and standing committees on various branches should exist and report at these meetings.
4. Meetings should be held in the Association's own rooms, and these should be made attractive and be always open.
5. Inducements should be held out to the students to offer themselves for examination.
6. The Act should be so amended as to protect the public from traps erected by incompetent individuals calling themselves architects.
7. A broad-minded spirit of sociability should pervade the meetings, so that pleasure as well as gain might result.
8. In addition to a reduced annual fee, benefits should be provided for members outside the city of Toronto who would not be able to attend all the meetings.
9. New members and young members should be encouraged by all to take an active part in the Association's work.
10. Papers to be read at meetings should be arranged for at least a year before they are read.
11. Some distinction should be arranged for the member whose work is of the highest merit each year throughout the province.
12. Regular exhibitions of work should be held, and an annual excursion might be arranged.
13. Everything possible should be done to encourage the public to learn the difference between good, bad, and indifferent work.
14. The back dues of members who have dropped out might be struck out and these architects reinstated.
15. The whole profession in Ontario should realize that several institutions cannot succeed, and that only by united effort can success be obtained, and a spirit of concession on all sides should make it apparent that the Ontario Association of Architects, working under Act of Parliament, and on a strong financial basis, with constitution amended to suit all as nearly as possible, should be the proper medium through which our efforts to advance good architecture in Ontario should be made.

Yours truly,

F. S. BAKER.

LONDON, ONT., November 13th, 1899.

DEAR SIRs,—Your letter of November 2nd., with five hard questions, was received. The following is an unsatisfactory attempt to answer some of them :

1. The Association might do some good to the profession at large by establishing some means of regular communication amongst architects, regarding the actual problems which each member of the profession meets with from time to time. A consulting committee might undertake giving advice to any member

who might have a difficult problem on hand, and all members could be urged to present their difficult problems, either before or after solution, for the enlightenment of others.

2. A satisfactory answer to the first question would make this question unnecessary.

3. Simple competitions, open only to students of the Association, with slight rewards and useful criticisms, should help all students in architecture who have any ambition.

4. Some changes in the policy of the Association seem necessary, but I cannot think of any to suggest.

5. Well written articles, describing the structural and artistic advantages brought about by the proper education of students, and published in all Canadian newspapers, will do more good than all the conventions we have yet held.

Yours truly,

FRED. HENRY.

HAMILTON, November 3rd, 1899.

GENTLEMEN,—In reply to your circular letter of November 2nd will say in answer to your first question :

1. A unanimous move to license architects.
2. By holding annual architectural exhibitions and giving prizes.
3. Same as above.
5. Same as first.

Promote a more friendly feeling amongst architects by holding frequent gatherings where papers of interest can be read and discussed.

Sincerely,

W. W. LACHANCE.

School of Practical Science,

TORONTO, November 10th, 1899.

DEAR SIRs,—In reply to your favor of the 2nd, I beg to say that I cannot see my way clear to answer the questions you put through the press.

If it is the desire of the Ontario Association of Architects to make any changes, I shall be pleased to assist them in any way possible, and can assure you that the School is interested in the success of the Association.

I am, yours sincerely,

C. H. C. WRIGHT.

We hope to receive additional suggestions for publication in our December number.

MANUAL TRAINING IN PRIMARY SCHOOLS.

The important announcement is made that Sir William C. McDonald, of Montreal, who has become widely known as the giver of several large benefactions to McGill University, has offered to equip and maintain for three years an institution in every province of the Dominion for the purpose of giving manual training to boys between the ages of nine and fourteen, attending public schools. It is the purpose to bring from Great Britain or the United States experienced teachers to conduct the work, and also to send several teachers from Canada to take a course of training in Great Britain and Sweden, who, on their return, should be equipped with information and enthusiasm to enable them to advance education of this character in the Dominion.

THE PROVINCE OF QUEBEC ASSOCIATION OF ARCHITECTS.

ON the evening of Oct. 31st the new rooms of the above Association on St. Catherine street, Montreal, were formally opened. The ceremony took the form of a reception by the President and Council to members and invited guests, among whom were represented kindred art and scientific societies. An address of welcome was given by the President of the Association, Professor Capper. Later on in the evening were exhibited lantern slides illustrating the Cathedral of Notre Dame at Paris, and particularly the sculpture on the exterior of the building. Illustrations were likewise shown of the Parthenon, and of the sculpture adorning the building. A musical programme was also rendered.

The Council of the Association have decided to hold, in January next, in the Association rooms, an exhibition of architectural drawings and photographs, designed to exhibit the progress and development of the profession. The purpose is to have an exhibition of this character annually in the future.

ONTARIO ASSOCIATION OF ARCHITECTS.—TORONTO CHAPTER.

THE Executive Committee of the Chapter have elected as its officers for the ensuing year: Mr. E. Burke, chairman, and Mr. J. Wilson Gray, secretary-treasurer.

Two meetings of the Chapter have already been held, the first on October 9th and the second on Monday evening last.

Following out suggestions offered at the annual meeting in the spring, the executive are arranging to have the meetings this season of a more social character than formerly, and to this end they have been held at the Temple Cafe, in one of the handsome private dining rooms of that popular restaurant. Two very enjoyable evenings have been spent. After dining together a number of interesting professional topics have been discussed, and at the last meeting several of the members who had recently returned from visiting some of the large American cities gave an account of their trips. The introduction of the social element into the monthly meetings of the Chapter promises to be an attractive feature, the last meeting particularly showing this in the greatly increased attendance.

BY THE WAY.

THE suggestion made at a recent meeting of the York Pioneers that the monument of the late Governor Simcoe be placed in front of the new municipal buildings, instead of in Queen's Park, Toronto, is one that should not be carried out. Governor Simcoe was the first governor of Upper Canada, and, it is therefore fitting that his statue should be associated with the Ontario legislative buildings.

x x x

SOME years ago the English insurance authorities raised the rates by 20 per cent. within certain defined limits of the city of Halifax, on account of the hazardous nature of the buildings. Fearing that similar action might be taken with regard to St. John, in view of the recent fire and the inefficiency of the fire equipment to deal with the tall buildings which have lately been erected, the local fire underwriters have called the attention of the city council to the necessity of improving the fire alarm service and protective appliances, but not a word seems to have been said about the use of fire-resisting materials.

x x x

WITH the object of reducing to a minimum the fire risk, the management of the Paris Exposition have carefully regulated the width of doors and steps. All exterior doors will open in and out. Doors opening only inwards must remain open constantly. Emergency doors will bear inscriptions stating their purpose. An emergency lighting system for night use will consist of lamps bearing the distinctive red color. All wood of the framework in the buildings and all stairways will be rendered fireproof. All the floors, railings, and balustrades will also be fireproof. All awnings and canvas covering must be fireproof. A fire service, as nearly perfect as possible, will be established, with water piping and pressure sufficient for firemen's service.

x x x

ONE hears the complaint even from the old lands across the sea that the functions and qualifications of the architect are but imperfectly understood by the masses. It is not to be wondered at, therefore, that in a comparatively new country like Canada there should exist in many minds the haziest notions on the subject. Some imagine the architect to be a man whose main business it is to draw pictures of houses on paper, leaving to the "practical man" the task of putting the materials together in proper form. Some such idea as this must have been at work in the mind of the client of a young architect of my acquaintance, who, on visiting his building while in course of construction, called aside one of the hod-carriers, and in a confidential tone enquired of him if the thickness of the walls and supports was about what was usually considered proper for a building of such character. The architect, on learning of the action of his client, instead of manifesting indignation, was quick to perceive and appreciate the humor of the incident.

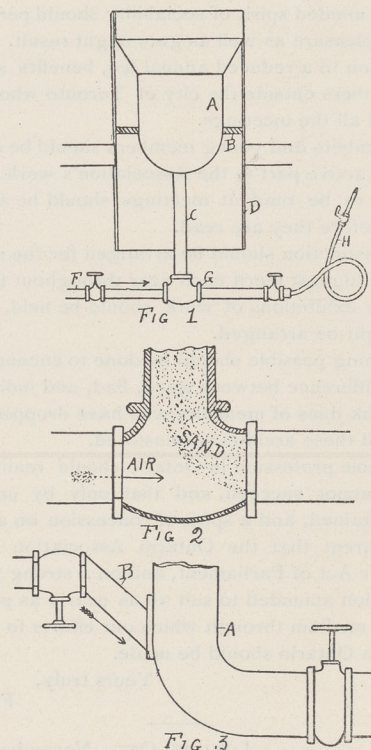
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MR. Edward Hurst Brown states in the columns of a contemporary, the following amusing incident: The other day an employing bricklayer in New York city went to a certain job he had under way and, not seeing the work progressing as rapidly as he would have liked, took off his coat, and, picking up a trowel, began to lay bricks in an expert manner. The sight of a boss

bricklayer actually engaged in laying bricks was so unusual that the journeymen stopped their work to gaze upon him. Then they began to whisper one to the other. Finally one of them left the job and hurried after the walking delegate. In the course of an hour or two this individual appeared upon the scene. 'Good morning,' said the boss bricklayer, 'is there anything wanted to-day?' Clearly here was a man working on the job who was not a member of the union, and it was the walking delegate's duty to demand his union card, and if he failed to produce it to insist that he be immediately discharged, and should the boss refuse, to order the men upon a strike. But the rules of the union did not contemplate the idea that a boss would actually work with his own hands. So the walking delegate studied the situation for a while, and finally said that he guessed nothing was wanted that day. Then he went to the Board of Walking Delegates and called them together in solemn council to decide the question as to whether an employer had the right to work upon a job himself unless he could produce a union card showing that he was in good standing. But as employers are not eligible to membership in the union, the problem became a very knotty one, and at last accounts the question had not been solved, and the boss was still working along with his men, and was running his own business to suit himself.

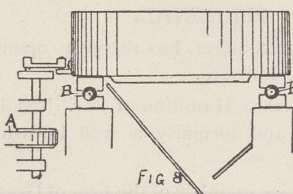
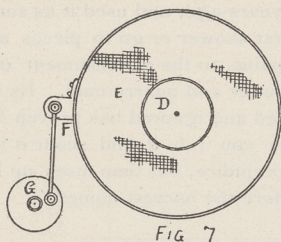
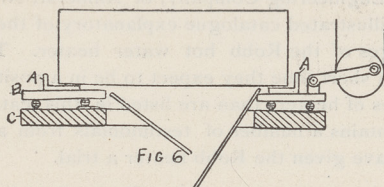
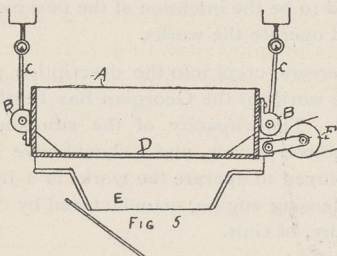
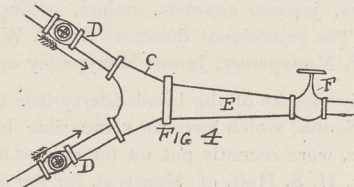
THE SAND-BLAST IN ARCHITECTURAL WORK.

OWING to the increased use of the sand-blast for producing designs on window glass, cutting ornamental effects on building stone, removal of corrosive substances from clogged drainage systems, the reduction of metallic surfaces for building trimmings and general architectural purposes, the accompanying descriptions



of how to build and use a sand-blast, together with a description of sand sifting apparatus, may be useful to architects and builders. If the sand-blast apparatus is properly built, the force which may be obtained from the stream of fine, hard and sharp grains of sand from the machine is remarkable. The discharge of sand is capable of cutting the hardest of substances.

First, the sand box should be made. This is marked A in Fig. 1. It can be made of sheet metal, rounded, and edges lapped where the seams come. A good size for ordinary work is 30 inches diameter of the lower part and about seventy-two inches entire depth. A wood case D is now built and the sand box held in this by means of the braces B. Next buy a T-joint G, and connect with the sand box with the pipe C. The sand will fall to the T-joint of its own weight, where it is met by the blast of air from the pipe F. The sand is carried with great force out through hose pipe H, where the workman directs the jet against whatever object is to be operated upon. The sectional view of the T-joint in Fig. 2 shows the idea. The air blast is obtained in



several ways. An air compressor can be purchased, but this is costly. Some have used common blowers with good effect. Steam may be used direct from the boilers on certain kinds of work.

Figs. 3 and 4 are given to show different methods employed for combining the air and the sand, instead of the system in Fig. 2. In Fig. 3 the pipe leading from the sand supply is rounded at A and the sand drops into the rounded portion, where it is met by the air discharge from pipe B. The air and sand combine and pass out through the discharge pipe with considerable velocity. Another pattern is in Fig. 4, in which the sand and the air are received at angles through pipe D, D, the latter joining in the lug C, where the contents of both pipes are combined and discharged through E into the hose pipe. The valve for

governing the force of the jet is F. Almost all of the parts mentioned can be purchased of dealers in steam, gas and water pipe fittings.

Crushed quartz is usually selected, as its cutting powers are useful. Trap rock is serviceable owing to the roughness of its grains. Florida rock is also used. Some river and beach sands are available, if not worn too smooth.

The types of sifters shown in Figs. 5 to 8 can be made and provided with sieves ranging from 8 to 140 wires to the square inch. Two forms of hanging cradles are presented in Figs. 5 and 6.

To make the former, first build the cradle A about three by five feet and ten inches deep, of hard wood, edges square, and bottom cut out at D for the sieve. Set screw pin bearings B, B to the ends and link these to the ring bolts overhead by means of the pieces C, C. The chute E may be wood or sheet metal. The cradle can be operated by hand power or by belt power. The latter calls for the placing of a wood pulley on a stud at F and driving the same by means of a belt. Connection with the wheel and the cradle is made with a wood piece as shown. The form of sifter in Fig. 6 uses the same kind of a cradle, but the overhead suspension is replaced by underneath supports C. The latter is 2 inches wood planking, provided with four small steel rolls in bracket bearings. The cradle bears upon two lipped pieces of wrought iron adjusted as at A, A. The lipped pieces are riveted to the base piece B, which is of cast iron. The lower side of the base piece bears on the rolls and the necessary vibration is given by means of the belt-and-pulley connection, as in Fig. 5. Fig. 7 is a top view of a rotary sieve. The cradle is made cylindrical and wired as at E, and provided with a central sand chute D. A bracket is bolted to the side of the cradle at F, and the required sifting movement procured by means of the revolving wheel and connection at G. Fig. 8 is a side view showing the belting system at A for turning the wheel. This cradle can be placed on ball bearings, as shown at B, by using grooved tracks for the balls, or the cradle may bear on a single smooth ring. Zinc or sheet iron may be used for constructing the cradle.

Patterns of ferns, monograms, artistic ornamental patterns, and figures of all descriptions can be cut upon plate glass, stone and many of the metals by means of cutting out the pattern first in zinc, gelatine, hard sheet rubber or other thin material to protect that part of the surface which it is desired not to touch. The jet of sand is played upon the exposed surfaces and the desired design rapidly cut.

When cleaning corrosive matter from clogged drainage systems, care should be taken not to apply the discharge too long upon any exposed metal, otherwise the piping may be damaged. The accumulations of foreign substances on basement stonework may be removed with the sand blast and the stone made to appear like newly-cut. None of above apparatus is patented.—R. F. Fells in American Architect.

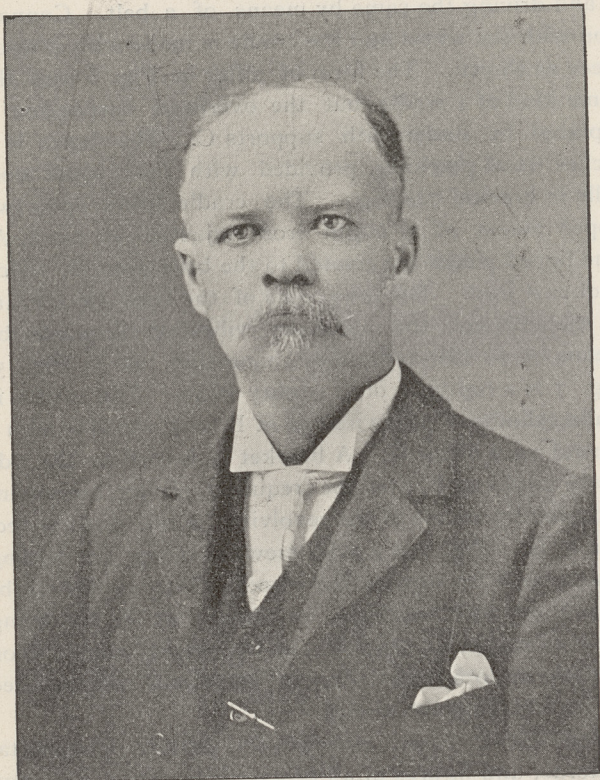
The Ontario Association of Architects have asked the Provincial Government to instruct the School of Practical Science to undertake a scientific test of Canadian timbers, with a view to ascertaining their structural strength and other features. The School of Science possesses the necessary machinery for testing timber, but a government grant is necessary to meet the expense of cutting the wood, under proper supervision, selecting the proper varieties for comparison, and obtaining data as to the age of each tree and the condition of growth.

MANUFACTURES AND MATERIALS

WILLIAM A. GUNN.

THE announcement of the death at his home in London, Ont., on October 21st, of Mr. William A. Gunn, secretary of the McClary Manufacturing Company, caused widespread regret. The cause of death was Bright's disease, from which the deceased had for some time been a sufferer. His last illness dated from August, when he was obliged to cease business activities. By his death the company with which he was connected suffers a serious loss, and the city of London, in which he was born, and which was the scene of his active and useful career, is deprived of one of its most highly esteemed and valued citizens.

The late Mr. Gunn was a son-in-law of Mr. John McClary, and for twelve years previous to his death had



THE LATE WILLIAM A. GUNN.

been secretary of the McClary Manufacturing Co., in which capacity he displayed business ability of a high order coupled with unflagging industry. He was also a director of the, Ontario Loan and Debenture Co.

A wife, four sons and two daughters comprise the bereaved family.

The funeral was attended by three hundred and fifty employees of the company and a large number of the leading citizens.

MINERAL PRODUCTION OF QUEBEC.

FROM the annual report of the Inspector of Mines it is learned that the total value of the mineral production of Quebec last year was \$1,673,337, of which bricks alone represent a value of \$600,000 and lime of \$140,000. About \$500,000 worth of asbestos was mined and \$200,000 worth of copper. This leaves about \$200,000 worth of iron ore, gold, mica, chrome ore and slate. Phosphate mining, once so important an industry, has declined until at the present time it amounts to very little.

A representative of the Pierre Mahy Glass Works, of Rabusart, Belgium, was in Chatham, Ont., recently, with a view to the erection there of a window glass factory.

The Fairbanks Company, of Montreal, are sending out to architects and others a circular directing attention to the merits of Fairbanks valves. A copy of this circular will be mailed on request.

It is reported that a joint stock company is to be formed, composed of Breslau, Guelph and Toronto business men, to acquire Mr. Fred Shaefer's brick yards at Breslau, the intention being to manufacture pressed brick.

A copy of a little booklet has been received from Messrs. Henry Pels & Company, 66 Broad street, New York, which contains particulars and illustrations of machines for punching and cutting structural iron and steel by hand.

A charter has been granted to the Imperial Varnish & Color Company, Toronto, with a capital stock of \$100,000, to manufacture varnishes, japans, enamels, paints, colors, insulating materials, etc. The provisional directors are J. W. Flavelle, J. M. Sparrow, I. F. Monypenny, James Monypenny and James Hales.

The extensive works of the Londonderry iron Co., at Londonderry, Nova Scotia, which have for some time been in the hands of a liquidator, were recently put up for sale at auction, and purchased by Mr. H. S. Holt, of Montreal, for the sum of \$153,000 cash. It is said to be the intention of the new owner to make improvements and operate the works.

A couple of errors crept into the description published in our last issue of the works of the Georgian Bay Portland Cement Co. at Owen Sound. The capacity of the storehouse should have been given as 40,000 barrels, and it should have been stated that the engine employed to operate the works is a Jerome Wheelock compound condensing engine, manufactured by the Goldie & McCulloch Company, of Galt.

The Robb Engineering Company, of Amherst, N.S., have published a new illustrated catalogue explanatory of the construction and advantages of the Robb hot water heater. The company state that in a short time they expect to be in a position to supply a larger series of heaters than are listed in this catalogue. The catalogue contains a number of testimonials from architects and others who have given the Robb heater a trial.

A Canadian correspondent of the Clayworker has this to say regarding our native terra cotta: "Ontario sampled architectural terra cotta some twenty years ago, and used it as something that was sure to melt in the first shower or go to pieces after the first Ontario winter, but it remains, to the astonishment of some and the disgust of the stone cutter and quarry man. Its being talked against, kicked at, belittled and ignored has proven like the Irish peddler's tin—'the more you rub it and scour it the thicker it grows.' Time removes prejudice, but time uses up life, too, and the pioneer grows old before the harvest comes."

PERSONAL.

Mr. M. B. Aylsworth, architect, has recently opened an office at No. 23 Jordan street, Toronto.

The death is announced at Hamilton of Mr. Josiah Baker, an old resident of that city and formerly a well known contractor. He was 73 years of age.

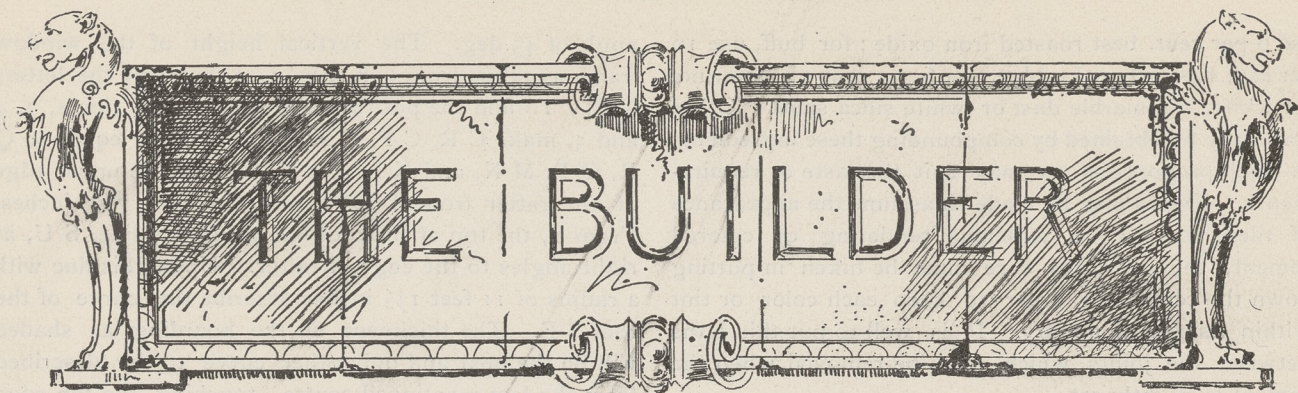
Mr. A. H. Gregg, junior member of the firm of Gregg & Gregg, architects, has returned to Toronto after a residence of more than a year in the United States.

Dr. P. H. Bryce, secretary of the Provincial Board of Health of Ontario, has been elected president of the advisory council of the American Public Health Association.

Mr. Cornelius McGourty, a well-known contractor of St. John, N.B., was recently killed by an explosion of dynamite. By his warning the lives of eight men who were standing near were saved.

Mr. W. T. Marion, of the Dominion Radiator Company's staff, was presented with a purse of gold and the good wishes of his fellow employees on his departure with the Canadian contingent for the Transvaal.

Mr. James A. McMahon, of St. Catharines, a well known contractor, died recently from injuries received by a fall at the hotel in Toronto, where of late he resided. Mr. McMahon constructed the bridge over the St. Lawrence river at Coteau and was associated with the late Mr. Sylvester Neelon in several important undertakings.



[THIS DEPARTMENT IS DESIGNED TO FURNISH INFORMATION SUITED TO THE REQUIREMENTS OF THE BUILDING TRADES. READERS ARE INVITED TO ASSIST IN MAKING IT AS HELPFUL AS POSSIBLE BY CONTRIBUTING OF THEIR EXPERIENCE, AND BY ASKING FOR PARTICULAR INFORMATION WHICH THEY MAY AT ANY TIME REQUIRE.]

**Cement Floors for
Cellars and for
Sidewalks.**

To make a good floor for a cellar, or to lay a good lasting sidewalk with cement requires considerable knowledge of the materials employed for the purpose, and some skill in their manipulation. For cellar floors, the first thing to be done is to prepare a foundation for a thick layer of concrete; this foundation—or bed—should be well tamped down, and afterwards a layer of gravel, cinders, or broken stones or brick, should be put in from three to four inches thick,—if the bed is of gravel from the start, that will be sufficient—this should be well drenched with water, and properly tamped until the bottom appears solid. The concrete, to a depth of three, four or six inches, may be put on this bed, being careful to tamp it solidly down to bed. If a smooth surface is desired, a thin coat of cement and sand should be well troweled over this; the cement being formed of one measure of Portland cement, and three of clean, sharp sand, mixed dry, and then moistened to suit. In preparing the concrete, the first thing required is a water-tight box or platform. Measure the correct proportions of cement and sand, then mix thoroughly dry; moisten slightly with clean water to make a stiff plastic paste. Drench the aggregates,—which may be broken stone, broken bricks or gravel of the proper size—well with water. Spread the proper proportion of this aggregate over the mixed cement and work it in with it quickly and thoroughly, then deposit in place as quick as possible and ram well into a compact mass. Place layer upon layer until the required thickness is obtained. If only three or four inches of a thickness is required, this may be put down at once; but, if several layers are necessary, then each layer should be allowed to remain twenty-four hours before the next is applied. Always clean and wet the surface of the concrete thoroughly before applying the next layer. If the area is large, and several mixings are necessary, connect the joinings with neat cement mortar, and if possible arrange the different layers so that the joints will be broken. Twenty-four hours after the work is finished, the floor should be moistened with clean water, and this practice should continue for a couple of weeks in order to get the best results. The temperature should be kept between 35 and 70 deg. Fahr. until crystallization has set in, which generally takes from twenty to thirty hours. The proper proportions for the concrete should be, one measure of cement, three measures of clean sharp sand, and six measures of broken stones, bricks or other suitable materials that will pass through a two-inch round hole. Mix as directed in the foregoing. In preparing for sidewalks, extra care must be taken to insure the best results. When there is danger of frost, dig out the

foundation eleven inches below the surface except at the outside edges, where a narrow trench two feet deep should be dug. Fill to within five inches of the surface with screened and washed cinders, pretty coarse gravel, or broken stones, well rammed and levelled. On this foundation place the concrete base four inches thick, well tamped. For extra heavy traffic this concrete should be six inches or more, in thickness. In very important work, iron rods or expanded metal laths are sometimes bedded in the concrete to prevent cracking. The top, or finishing coat, should be about an inch thick, and should be composed of one part cement, one part clean sand, and one part of crushed granite, crushed quartz or fine clean washed gravel; the first being the best. The concrete base must be roughened, cleaned and wetted before the finishing coat is applied. Level the surface off with a wooden float and straight-edge, obtaining the proper grade. The finishing coat should just have sufficient water to give it the consistency of fresh-dug earth that will stick in a ball when pressed in the hands. When about to set, trowel hard with a steel trowel or roll with brass roller. Cut the surface into blocks of proper size to prevent cracks, and to allow for contraction and expansion, cover with boards, paper, straw or sand to protect against atmospheric changes and to keep in the moisture. After twenty-four hours keep the surface wet for at least two weeks—this is important. The top coat should be applied before the base is dry, to keep it from separating from the foundation. Cellar floors can be laid for, from 8 to 15 cents per superficial foot, and sidewalks can be laid for, from 12 to 20 cents per foot, according to the quality of the work. As a rule it takes $2\frac{1}{2}$ barrels of cement to lay 100 feet of walk. One finisher and two helpers will lay from 300 to 800 feet of walk in a day, depending on the style of finish. For ordinary cellar floors three inches thick, one barrel of Portland cement and three barrels of sand will cover five square yards. Barnyards should be paved with concrete so that all the drainage may be carried to a pit. Stable floors, with drain at end, can readily be made of concrete and cement, and are lasting, sweet, and easily cleaned, and when properly made, form the healthiest of floors for horses or cattle. Cement may be colored without injury, if the best metallic oxides, without sulphur, are employed. Venetian red or lamp black should never be used; they run and fade and soften the cement. Excelsior carbon black, is the strongest black known. The following colors, if mixed with either prepared lime flour, or stainless Portland cement mortar, give excellent results: For black, use 2 per cent. excelsior carbon black; for red, use 10 per cent. best raw iron oxide; for brown

use 6 per cent. best roasted iron oxide; for buff, use 10 per cent best ochre; for blue, use 6 per cent ultramarine; for white, use marble dust or white silica sand. Other tints may be obtained by compounding these ingredients in such proportions as may suit the taste or requirements. Floors may be made to assume the appearance of tiled floors by a judicious rendering of colored cement, though extra care must be taken in putting down the cement in order to keep each color or tint within its own boundary. It is well to put thin laths between the joints which may be removed when the cement is slightly set.

Framing and Shingling an Eyebrow Window.

As the "eyebrow dormer" has become part and parcel of Canadian practice in building, a few hints regarding its construction and finishing may not be out of place. The eyebrow window, owing to its gracefulness, has, in many cases superseded the old-fashioned dormer, where effect and not use is sought. For the purpose of describing the curves and constructive details of an eyebrow window, proceed as follows: Draw a line A B, Fig. 1, which represents the top of the main roof

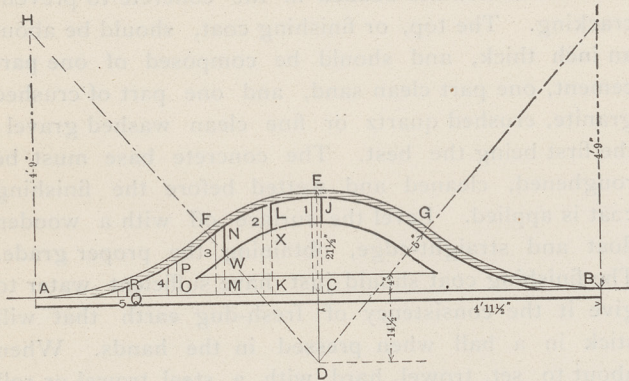


FIG. 1.—ELEVATION OF EYEBROW.

boarding. At right angles to A B, draw a centre line, D E. Measure each way from the centre C, a distance of 4 feet 11 1/2 inches as figured, from C to B, making C E 21 1/2 inches. Now on D as centre describe the arc F E G. At right angles to A C B draw the lines A H and B I, each equal to 4 feet 9 inches, connect I D and H D. Now with I and H as centres describe the arcs G B and F A; also describe the remaining curves from the centres I, H and D as shown. Space the ribs from the centre C as at K M O Q and numbered 2, 3, 4, 5. The sash may be obtained by using the same centres. In Fig. 2 a vertical section of the win-

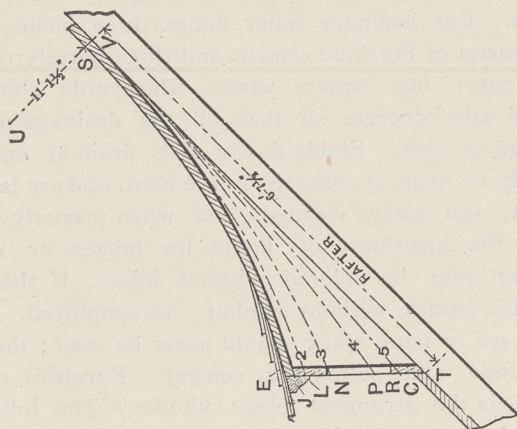


FIG. 2.—SECTION OF EYEBROW.

dow is shown in which the curves of the ribs are presented and the junction of the window with the roof. The pitch of the roof in this case is one-half or at an

angle of 45 deg. The vertical height of the window frame as taken from C E, Fig. 1, is shown by the letters C E. To find the position and heights of ribs 2, 3, 4 and 5, make C R, C P, C N and C L each equal to Q R, O P, M N, and K L, Fig. 1. Along the upper edge of the rafter from T to V set off 6 feet 7 1/2 inches. From S, the top of the roof board, draw a line, S U, at right angles to the edge of rafter. Upon this line with a radius of 11 feet 1 1/2 inches describe the curve of the roof S E. The thickness of the boarding as shaded will be the next and only other curve to be described from the last mentioned centre, touching the top edge of the rafter at V and the top of the window frame at J. As the radius for describing the flat curves is considerable and awkward to manage, all of them from first to last may be produced with a little care and judgment by bending a flexible strip of even thickness from point to point as measured. All the upper edges of the ribs numbered 2, 3, 4 and 5 and lettered to correspond at the front face of the window frame J L N P R must be curved as shown from the points lettered at the face of the window to the top of the rafter at V. All the ribs cutting against the inner face of the window frame and the centre rib, as well as the two on the right and left of it, have to be made to a depth, as at L X and N W, Fig. 1. It will be seen from Fig. 1 that the top edge of each of the ribs, except the centre one, requires to be beveled in line with the curved edge of the window frame. It is also evident from the direction of the curves R S, P 4, &c., Fig. 2, that the top edge of the window frame itself must be beveled, being square only at its top squared edge at A and B. On a roof of much less pitch than the one shown it may be desirable to lessen the height of the window or greatly extend the distance T V, Fig. 2. Perhaps both points may be deemed necessary in cases of very low pitch. Fig. 3, shows several examples of eyebrow windows in situ, the top one

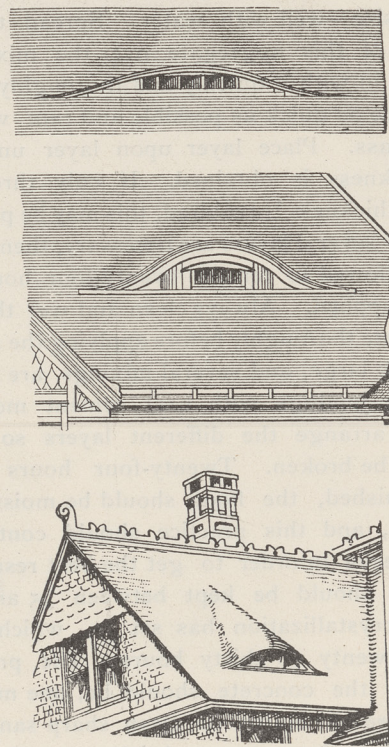


FIG. 3.—EXAMPLES OF EYEBROWS.

having but slight elevation, while the second more nearly approaches in outline Fig. 1. The third example is built on a steep roof, and shows up quite well. It will be noticed that in all these examples the shingles

are continued over the tops of the eyebrows in their regular courses without a break. There are no valleys shown other than what the shingles themselves form. This is one of the taking features of this style of dormer. Any attempt to form a valley and thereby make a break in the roof, will have a tendency to destroy the gracefulness of the work. With a little care the shingling over this style of window can be done so as to give the roof a fine appearance. Fig. 4 shows a projecting eye-

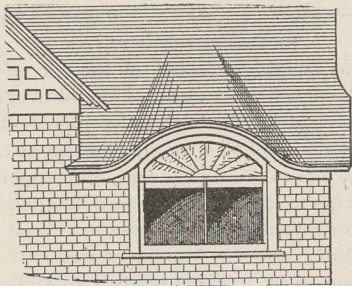


FIG. 4.—PROJECTING EYEBROW.

brow window over which is carried the whole width and depth of main cornice. The same rules of construction apply to this style of window as described in the foregoing.

“THE MONTREAL BUILDING BY-LAW OF 1899.”

BELOW will be found a first instalment of the proposed by-law bearing the above title now under consideration by the City Council, to regulate the construction, removal and inspection of buildings in the city of Montreal, and to prevent accidents by fire :

DEPARTMENT OF THE INSPECTION OF BUILDINGS.

SECTION 1.—There shall be in the city of Montreal, a department, to be called the Department for the Inspection of Buildings, which shall be charged with the enforcement of the provisions of this by-law, as hereby providing for the survey and inspection of buildings and the protection of the same against fire or accident.

The said department shall have its office in the City Hall, and shall be maintained at the expense of the city.

RECORDS OPEN TO INSPECTION.

SECTION 2.—The records of the department shall be open to city officials, and all parties whose property may be affected by the matters to which they relate.

STAFF OF DEPARTMENT.

SECTION 3.—The staff of said department shall consist of a chief, to be known as the inspector of buildings, and as many assistant inspectors as may be found to be necessary from time to time, and a clerk appointed by the city council.

SECTION 4.—In all future appointments the inspector of buildings shall be an architect or a practical man of experience in the construction of buildings. Assistant inspectors shall be men of experience, and experts in building construction, in its several branches, one of whom shall have a practical knowledge of electrical work as applied to the lighting of buildings.

SECTION 5.—Neither the inspector nor the assistant inspector be employed or engaged in any other business, or be interested in any work for buildings, or for furnishing of materials.

SECTION 6.—In case of the temporary absence or disability of the inspector, he may appoint one of the assistant inspectors as his deputy, who shall, during such absence or disability, exercise all the powers of the inspector.

SECTION 7.—The assistant inspectors, for any neglect of duty, may be suspended by the inspector, and the suspension and cause of same shall be at once reported to the Fire Committee who shall take action on same as they may deem fit.

DUTIES OF INSPECTOR.

SECTION 8.—It shall be the duty of the inspector, as chief of his department, to issue permits for the erection, enlarging or alteration of buildings, in accordance with the provisions of this by-law ; keep a record of the same, with a description of the construction, sanitary appliances, heating apparatus, electric ap-

paratus, elevators, and all matters relating to the construction or alteration of buildings in the city.

It shall be duty of the inspector, on receipt of an application for a permit, accompanied by the plans and specifications for the proposed building, or alteration, to carefully examine the same, and ascertain if the supports, beams, and construction of the proposed building, are properly shown in said plans and described in said specifications, and that they are in accordance with the provisions of this by-law. If the inspector is satisfied that they conform to this by-law, he shall, within a period of eight days from the date of application, return said plans and specifications, and issue a permit as hereafter provided for. If they do not conform to this by-law, he shall refuse to issue such permit.

It shall also be the duty of the inspector, upon issuance of a permit, to transmit to the City Surveyor the requisite notices for lines, levels, drains, and for the use of streets or squares for building material ; he shall also notify the Superintendent of the Water Works of the services required, and shall further transmit to the City Treasurer's office, a statement of all fees and water rates to be paid.

SECTION 9.—The inspector or his assistant shall examine all buildings in course of erection or alteration, as often as practicable, and in case of violation of the provisions of this by-law, and refusal to comply therewith, they are to report the name of the owner, architect, builder, or master mechanic concerned in the building where such violations have occurred, and all other matters relative thereto, to the clerk of the Recorder's Court, that proceedings may be taken against the party or parties concerned, according to law, and it shall be the duty of the clerk in the Recorder's Court, on the request of the inspector, to prosecute all parties infringing this by-law.

RIGHTS OF INSPECTOR.

SECTION 10.—The inspector or his assistants shall have the right to enter any building in course of construction, alteration, or enlargement, or any building which has been reported to him as in a defective or dangerous condition, or which he has reason to believe is in a dangerous or defective condition, either in regard to its construction or sanitation. In case of an appeal from a decision of the inspector, any member of the board of appeal shall have the same right.

SECTION 11.—The inspector or his assistants shall have the right to enter any building damaged by fire or through accident, and to examine the same with a view to ascertain the cause of the accident, and the condition in which the fire or accident has left the building, and make and keep an official record of the same.

They shall also have a right to examine buildings or premises, with a view to ensure the safe storage of combustibles, as hereafter prescribed in this by-law and to report on the same.

SECTION 12.—The inspector shall have full power to pass upon any question arising under the provisions of this by-law, relating to the manner of construction, or materials to be used in the erection, alteration, or repair of any building, or respecting the steps necessary to be taken to ensure the safety of any building that has been reported, or is known by the inspector to be in a dangerous or defective condition, either in regard to its construction or sanitation.

SECTION 13.—The inspector shall have authority, if he finds any building or part thereof, or any staging, or other structure connected with a building, or any other structure, in such a condition as to endanger life or limb, and whereby the immediate adoption of precautionary measures, or by the demolition of the dangerous portion of said building, staging, or structure, such danger may be averted, to cause such precautions to be taken, or demolition to be made, or to cause such work to be done as may be necessary to render such building or part thereof, or staging or structure safe, after having given notice, either in writing, or personally to the owner, lessee, occupant, or agent of said building and the inspector shall have the right to enter such building or premises, with such assistance as he may require, and have the said building or structure secured or taken down, and the public protected, at the expense of the owner, or other party interested, and the costs incurred by the inspector in the performance of such work, shall be paid for out of an appropriation to be voted by the city council to the fire department, at the beginning of each fiscal year, and any portion of said appropriation expended by the inspector in the execution of such work, shall be accounted for by him from time to time as may be determined by the fire committee, to be recovered with costs from the owner or owners, or other party interested, in any court having jurisdiction in the matter. Should such work as hereinbefore mentioned be urgent, and in the opinion of the inspector require to be done without the delay necessary in

notifying the owner, or other party interested, he shall have the right to have the work done and to recover the cost of the same as hereinbefore provided.

SECTION 14.—When the inspector is satisfied that any building or structure, or portion thereof, is being erected, constructed or altered, or has been erected, constructed or altered, in violation of, or not in compliance with, the provisions of this by-law, or in violation of the statement, plans and specifications submitted to and approved by the inspector, or of any permit issued by him, or that any order or direction made thereunder has not been complied with, he shall serve the owner or owners with a notice to remove such violation immediately after the serving of such notice.

In default of compliance with such notice to the satisfaction of the inspector, he may in his discretion institute an action or proceeding at law against the owner or owners before any court having jurisdiction therein, to restrain, correct or remove such violation, or to prevent the occupation or use of any building or structure erected, constructed or altered in violation of the provisions of this by-law, and said court shall, unless there has been an appeal from the accusation or order of the inspector as herein provided, hear the parties in the case, and give judgment thereon, or shall issue an order enjoining and restraining all persons from doing work upon such building or structure, or for occupying or using such building or structure, until the hearing and determination of said action and final judgment thereon.

No officer of said department, acting in good faith and without malice, shall be liable for damages by reason of anything done in such action or proceeding.

RIGHT OF APPEAL FROM DECISION OF INSPECTOR.

SECTION 15.—Should any question arise between the inspector and the owner, or his legal representatives, or should the said party object to any order or decision of the inspector, they shall have the right, within three days after the giving of such order or decision, to appeal from the same.

Should the inspector refuse to issue a permit as required by this by-law, the applicant for such permit shall, within three days after such refusal, have the right to appeal from said decision.

Should the inspector incur any expense chargeable to an owner, or should he order any person to incur expense other than provided for in section 11 of this by-law, the said owner or person shall have the right, within three days after the issue of such order, to appeal from the same.

Any person appealing from any order or decision of the inspector as herein described shall, within the time above mentioned, give notice to the inspector in writing that he does so appeal.

BOARD OF APPEAL.

SECTION 16.—The said Board of Appeal shall consist of an architect recommended by the council of the Province of Quebec Association of Architects, a competent civil engineer recommended by the council of the Canadian Society of Civil Engineers, and a master builder. The appointment of said Board of Appeal to be made by the city council.

SECTION 17.—The first named person appointed to said board shall serve for three years, the second named shall serve for two years, and the third named shall serve for one year. After the expiration of the first term, each member of the board subsequently elected shall hold office for three years.

Each member of the board shall be paid by the city a fee of \$5.00 for each case adjudicated on, and the city shall recover the amount of said fee from the appellant, in all cases where he is declared to be in fault.

SECTION 18.—No member of said board shall sit or adjudicate in a case in which he is interested, and in case of such disqualification, or in the absence of any member the other two members shall have the right to appoint a substitute, of the same profession as the absent member.

SECTION 19.—If two or more members of the board are disqualified, or if they are absent, the inspector shall appoint one substitute, the appellant another, and the two so appointed shall appoint a third, and the said parties shall have the same powers as the members of the board.

SECTION 20.—The said board shall not adjudicate on any question of law, but on all matters referred to them respecting the construction or sanitation of buildings, or the application of this by-law to the erection or alteration of any building, or to any order or decision of the inspector which has been objected to, and appealed from, as provided for by section 15 of this by-law, the decision of the board, or of a majority thereof, shall be final and binding on both parties.

PERMITS FOR ERECTION OR REPAIR OF BUILDINGS.

SECTION 21.—No building shall after the passing of this by-law

be erected, or altered, and no work affecting the strength or fire risk of any building, or part thereof, shall be done without a permit from the inspector, nor except in conformity with the provisions of this by-law.

Permits for use of street shall be obtained and paid for as provided in section 25; but in no case shall more than $\frac{1}{3}$ of the street be so occupied, and such occupation shall only be for deposit of materials required for the building.

WIDTH OF STREET ALLOWED TO DEPOSIT MATERIALS.

In no case shall the permit to deposit materials on the street exceed one-third of the street, between curb stone and curb stone. Where street car rails are laid on any street, such materials shall not be laid within eighteen inches of the nearest rail.

REGARDING FOOTPATHS.

In front of any building erected on the line of the street, the footpath shall be at all times clear of any obstruction. In cases where footpaths shall be required to be raised above its actual level, said footpaths shall be strongly built so as to carry a minimum load of 150 lbs. to the square foot, and proper steps and railings to give access to and from it. Said footpaths, whether on the street level or raised, shall be roofed to at least eight feet high clear from the path, and the framing of said roof shall be made sufficiently strong so as to carry safely a roof of at least (2) two inches thick, and to bear the weight of any falling material from upper stories—said roof to be water-tight.

SECTION 22.—Before the erection, repair, or material alteration of any building, the owner, architect, or builder thereof shall file with the inspector, a statement in writing on forms or blanks according to schedule "A," appended to this by-law, to be issued for the purpose by the inspector, and said statement shall give the intended occupation of the building, its dimensions and manner of construction, and all information necessary for the inspector to determine whether the proposed building is suitable for its intended uses, and its construction is according to the provisions of this by-law. The said statement shall be made under oath, and shall also mention:

- 1.—If a street line or level is required.
- 2.—If a portion of a street or square is required to be temporarily used by the builder in connection with the alteration or repair of a building, and the extent of the proposed occupation.
- 3.—If a water service is requested, and size of same.
- 4.—If a drain is to be laid from street sewer to the line of lot on which said building is to be erected, the level of said drain to be obtained from the department.
- 5.—The quantities of mason, brick, and plaster work on which to base the charges for water. The said party or parties shall submit for examination by the inspector, full plans and specifications for the building proposed to be erected, repaired or altered, and said plans and specifications shall be sufficient to enable the inspector to obtain full and complete information as to the character and extent of the work to be done. Should the plans and specifications so submitted conform to the provisions of this by-law, the inspector shall issue a permit for such erection, alteration, or repair, and shall identify by a stamp or seal, with the date, for future reference, the said plans and specifications, and they shall, after such identification, be returned to the applicant, who must produce such plans and specifications, when required to do so, for the purpose of comparing them with the building as carried out. The plans and specifications submitted to the inspector, as described in this section, shall show the proposed drainage and plumbing work, and description of the same, and said plans and specifications shall be submitted by the building inspector to the health department for examination by the engineer of that department, and he shall obtain his approval and endorsement on the plans and specifications for such drainage and plumbing work.

SECTION 23.—No permit shall be granted for the erection of any dwelling house or building where people congregate, unless drainage connection can be made directly with a public sewer. If the matter mentioned in any application for a permit, or if the plans and specifications accompanying it, indicate to the inspector, and the engineer of health department, that the work to be done is not in conformity with the terms of this by-law, inspector shall refuse to issue a permit, until such application, plans and specifications have been made to conform to the requirements of this by-law.

SECTION 24.—After a permit has been issued upon an application, plans and specifications approved by the inspector, no alterations shall be made in such plans or specifications as will reduce the strength of any portion of the building, or injuriously affect the sanitation of the same.

In case any change is made in any building or premises, or in

any erection for which a certificate has been issued, or which has had the approval of the inspector under this by-law, whether in the use thereof or otherwise, such as would annul the terms or conditions of such certificate or approval, such change must be notified at once to the inspector.

SCHEDULE OF FEES FOR PERMITS.

STREET LINES, USE OF STREETS, WATER, ETC.

SECTION 25.—The fees to be paid for permits for the erection or alteration of buildings shall be as follows :

For sheds not exceeding 256 square feet in area..... \$1.00
For buildings one story in height and not exceeding 1,000 square feet in area..... \$1.50

For buildings more than one story in height and larger in area than 1,000 square feet, the permit shall be at the rate of ten cents for every 1,000 cubic feet or fractional part thereof contained in said structure, the cubic contents being ascertained by measuring every part of the building from the basement floor to the top of roof and to include all bay windows or other projections.

The fees to be paid for the use of streets shall be in proportion to the frontage occupied, and shall be at the rate of two cents per month per foot frontage of street so occupied.

The fees to be paid for obtaining a street line or level shall be, for every such line or level..... \$1.00

The fees to be paid for water used in the construction of a building shall be as follows :

For every 1,000 bricks used in said building..... 6 cents
For every cubic yard of masonry, concrete or terra cotta 2 cents
For every one hundred superficial yards of plastering... 30 cents

GENERAL PROVISION.

SECTION 26.—Every wall, structure or building hereafter built or altered in the said city shall conform to the provisions of this by-law, except temporary or moveable buildings, elevators, coal chutes, as mentioned in this by-law. Plans for any building not provided for in this by-law must receive the sanction of the city council before commencing operations thereon.

MEANING OF TERMS.

SECTION 27.—In this by-law the following terms shall have the meanings respectively assigned to them :

“FIRST CLASS BUILDINGS”—Mean buildings of fire-proof construction throughout.

“SECOND CLASS BUILDINGS”—Mean all buildings of which the external and party walls are of brick or stone, or other equally substantial and incombustible material.

“THIRD CLASS BUILDINGS”—Mean all buildings such as are described in section 32 of this by-law.

“ALTERATION”—Means any change or addition (except necessary repairs) to or upon any building, which affects any external party or partition wall, chimney, floor or stairway, or in any manner endangering life, or causing additional fire risk.

“APARTMENT OR TENEMENT HOUSE”—Means a building any portion of which is occupied, or intended to be occupied, as a dwelling by two or more families living independently of one another, and either doing their cooking in their own rooms or upon the premises.

“CELLAR”—Means the basement or lower storey which is wholly below the level of the street or of which half or more of the height from the floor to the ceiling is below the level of the street adjoining.

“FOUNDATION”—Means that portion of a wall below the level of the street curb, and, where the wall is not on a street, that portion of it below the highest ground next to the wall. The foundation of a party wall may mean that portion below the level of the cellar floor.

“HEIGHT OF BUILDING”—Means the perpendicular distance of the highest point of the main roof above the highest street level of the principal front.

“HEIGHT OF WALL”—Means the height from the mean grade of the sidewalk or adjoining ground to the highest point of the wall.

“INSPECTOR”—Means the Inspector of Buildings for the city of Montreal.

“LODGING HOUSE”—Means a building in which persons are temporarily accommodated with sleeping apartments, and includes hotels.

“PARTY WALL”—Means a wall used or built in order to be used as a separation between any two buildings.

“PARTITION WALL”—Means any internal wall built of stone or brick or other incombustible material.

“EXTERNAL WALL”—Means every outer wall or vertical enclosure of a building other than a party wall.

“REPAIRS”—Means the reconstruction or removal of any existing part of a building, or of its fixtures or appurtenances, by which the strength or fire risk is not affected or modified, and not made, in the opinion of the inspector, for the purpose of converting the building in whole or in part to a new one.

“WOODEN BUILDING”—Means buildings made of wood, and applies to all buildings made of wood, the outside of which is veneered with brick or terra cotta.

“THICKNESS”—Means the minimum thickness of any wall.

“THEATRE”—Means any building having a stage with fixed and moveable scenery, fire-proof curtain, and machinery to be used for dramatic, operatic, or other similar purposes.

“PUBLIC BUILDINGS”—Means churches, chapels, seminaries, colleges, convents, schoolhouses, hospitals and asylums, hotels, theatres, halls for public meetings, government and municipal buildings, etc.

“OWNER”—Means every person in possession of any land or building in the said city, or in receipt either of the whole or any part of the rents or profits thereof, or in the occupation of such land or building, other than as a tenant from year to year, or for any less term, or as a tenant at will.

“BUILDER”—Means the master builder or contractor employed to execute any work upon any building.

“COUNCIL”—Means the Council of the city of Montreal.

“PERSON”—Shall include a company, or a body corporate.

BUILDING LIMITS.

SECTION 28.—The city council may, from time to time, by resolution, establish and extend limits within the city, and within these limits every building erected after the passing of this by-law shall be of the first or second class, with the following exceptions :

EXCEPTIONS (TEMPORARY SHEDS).

(a.) Temporary sheds made of wood for the use of workmen or storage of materials in connection with the erection of buildings of the first and second class.

SHEDS USED AS OUTBUILDINGS.

(b.) Sheds used as outbuildings for buildings of the first, second and third class, provided that the roof is covered with fire-proof material, that the sides or ends which are closed are cased with brick or other incombustible material, that the said shed is not over 300 feet in area and not more than 15 feet high to top of roof, and that it is supported on a stone foundation or on stone piers.

BUILDING FRONTAGE LINES AND HEIGHT OF BUILDINGS.

SECTION 29.—The council may fix and from time to time determine streets on which a line shall be fixed, at such distance from the line of said street as may be determined on by said council, and beyond which line no building shall hereafter be erected. The council may also fix and determine streets in which it shall not be lawful, after such determination by said council, to erect any building unless the said building is three storeys or more in height, and that it is constructed of stone or other material approved of by the council, but no building, in any street in the city, shall exceed ten storeys in height above the sidewalk or street level, or be more than 130 feet from level of sidewalk to the roof.

EXTENSION, REPAIR, ERECTION AND CASING OF WOODEN BUILDINGS.

SECTION 30.—No wooden building erected previous to the passing of this by-law, shall be extended or built upon, unless such extension, or addition be made of fire proof material, nor unless the owner of said building shall have previously obtained a certificate from the inspector to the effect that the proposed extension or addition can be made with safety.

No wooden building already existing, and not cased with brick, shall be removed from one lot to another, nor from one portion of a lot to another portion of the same lot.

SECTION 31.—It shall be unlawful to repair any wooden building not cased with brick, erected previous to the passing of this by-law, when such building shall have been damaged by fire or by natural decay to the extent of forty per cent of its value ; the decision of the inspector shall be conclusive as to the amount of damage to said building, but the owner shall have the right to appeal from said decision in the manner prescribed in section 15 of this by-law.

SECTION 32.—Third-class buildings may be erected within the limits prescribed by the city council, provided :—

1st.—That the external walls of said buildings are made with three inches thick grooved and tongued sound plank, so braced and framed and joined together as to be solid and rigid.

2nd.—That the said building shall not exceed thirty feet in height above the average level of the sidewalk to the highest

point of the roof, and no more than 2 storeys, shall be in wood, with a mansard roof.

3rd.—That the walls of said building shall be cased with brick-work not less than four inches thick, or with stone not less than 6 inches thick, laid in Portland cement, and in each case properly secured to the wood work.

SECTION 33.—Any wooden building which may hereafter be erected contrary to the provisions of this by-law, shall be deemed a nuisance, and it shall be the duty of the inspector to give notice to the owner or builder of said building, to abate such nuisance, and in the event of the owner or builder failing to do so within 24 hours, the inspector may cause such building to be demolished, and the expenses incurred in doing so may be collected from the said owner or builder, before the court having jurisdiction in the matter.

SECTION 34.—No terrace or row of brick cased wooden buildings shall be erected, unless the same is divided by cross walls of brick work at intervals of not more than 30 feet; the said cross walls shall rest upon continuous stone foundations, and shall be not less than eight inches thick, where the building is only one or two storeys in height. If the building is three storeys in height, the cross walls shall be twelve inches thick in the first storey, and eight inches thick for the balance of the height; the said cross walls shall extend one foot above the roof as provided for in section 65, of this by-law. They shall also extend to the outside face of the front and rear wood walls and be tied to or connected with the four inches brick casing.

SECTION 35.—A wooden building erected in compliance with section 32 of this by-law, shall be encased with brick as soon as practicable after erection. Should the owner or builder fail to do so within ten days after being notified by the inspector to build such casing, the said building shall be deemed a nuisance, and shall be subject to the provisions of section 33 of this by-law.

SHEDS CONSTRUCTED OF WOOD.

Sheds not exceeding twelve feet in height at the peak or highest part thereof, may be constructed of wood, in rear of third-class buildings; provided the roof of such sheds be covered with incombustible materials, and provided also that the term "Sheds" be so construed as to mean a structure with a roof sloping one way with one of its sides entirely and constantly open, and such open side to be at least eight feet from any other structure.

TEMPORARY SUPPORTS.

SECTION 36.—Temporary supports placed under any structure, wall, girder, or column, during the erection, alteration or repairing, of any building, or portion thereof, shall be amply sufficient to bear the load, and equal in strength to the permanent support, or supports of said construction.

The walls of any building in course of erection shall be strongly braced from the beams of each storey until the bearing parts of the construction are completed.

SCAFFOLDS.

SECTION 37.—Any scaffold erected for the use of workmen engaged upon the erection, repair, or alteration of any building or structure, shall be so made and constructed as to safely bear the loads imposed upon it, and to afford ample protection to life and limb.

QUALITY OF MATERIALS.

SECTION 38.—All materials of whatsoever kind shall be of good quality, and sufficient in every respect for the purposes for which they are to be used, and to conform to the best legal trade, and manufacturers' standard, and to be subject to the approval of the inspector.

BRICKS.—The bricks used in all buildings shall be good, hard, well burnt bricks.

BRICKWORK.—Walls and piers of all buildings shall be properly bonded with row of headers, at least every fifth course of brick-work or equivalent thereto, and solidly put together with close joints filled with mortar. They shall be built to a line and be carried up plumb and straight. The walls of each storey shall be built up the full thickness to the top of joists above. All brick laid in non-freezing weather shall be well wet, immediately before being laid. Walls and piers or parts of walls and piers, if frozen, shall not be built upon.

SAND.—The sand used for mortar shall be clean, sharp sand, and shall be equal to the standard samples kept in the office of the inspector.

MORTARS.—Cement mortars shall be made of sand and cement in the proportion of not more than three parts of sand to one part of cement approved by the inspector, and used immediately after being mixed. Lime mortar shall be made of not more than four parts of sand to one of lime, for stone work, and three parts of

sand to one of lime, for brick work, and shall not be used before being thoroughly slaked. All cement to be of a brand approved by the inspector.

CONCRETE.—Concrete for foundations, etc., shall be made of one part of cement, two parts of sand, and five parts of small clean broken stone, all carefully mixed, or one half of the five parts may be clean gravel, and the other half small broken stone.

TIMBER.—All timbers and wooden joists and beams used in any building shall be of good sound material, free from rot, large and loose knots, shakes, or any imperfection, whereby the strength may be impaired, and be of such size and dimensions as the purpose for which the building is intended may require, and according to the rules given in the works of the best recognized authorities.

FOUNDATIONS FOR BUILDINGS.

SECTION 39.—Every building hereafter erected, except those of a temporary character, as herein provided for, shall have foundations of stone or hard weather proof brick, approved by the inspector, the bottoms of which shall be laid a depth of not less than four feet six inches below the surface of the ground at all points, and shall be laid upon solid ground or level surface of solid rock, or upon piles, or concrete, or other solid structure.

If brick as above mentioned is used, it must be laid in Portland cement.

SECTION 40.—In case the nature of the earth requires it, foundations are to be made by driving piles; where piles are used, they are to be of sound timber not less than five inches in diameter at the small end, and are to be driven to a firm and solid bearing. There shall be not less than two rows of piles below any external or party wall, and they shall not be spaced at a greater distance apart than three feet from centre to centre, in the direction of the length of the wall.

A single row of piling may be placed below an internal wall, provided that it is not over twenty feet in height, and that such piling is approved of by the inspector.

The heads of piles are in all cases to be cut off two inches below the level of the bottom of the footing, and are to be encased in cement concrete, of not less than nine inches in thickness, this concrete to extend not less than eight inches beyond the outer face of piles on each side.

In no case shall an excavation for a basement or cellar be made on either side of a wall supported on piles, so as to expose the piles; such excavation shall terminate at least six inches above the bottom of the footing resting on the piles or of the concrete in which they are imbedded.

SECTION 41.—Where the nature of the earth requires a wider sub-structure than can be obtained with stone, the sub-structure may, in the case of buildings of the third class, or of buildings of the second class, which do not exceed two stories in height, be made of hemlock, or tamarac timbers, bedded on the earth, the size and disposition of these timbers to be subject to the approval of the inspector.

SECTION 42.—If steel or iron beams are used for the sub-structure of any building, they must be thoroughly imbedded in cement concrete, the concrete, to be entirely free from cavities, and to thoroughly envelope the beams; the exposed surfaces of such concrete foundations to be coated with cement mortar not less than one inch thick.

The cement used for all concrete in foundations must be of a standard approved of by the inspector, and shall have a tensile strength of 350 lbs. per square inch, after being immersed seven days in water. When the inspector shall have reason to doubt the quality of the cement, and that it is not equal to the standard fixed, he shall have the right to order the contractor to have the same tested by a proper and responsible party, at the contractor's expense, and to submit the signed certificate of the test to him.

Substructures made with steel or iron beams and concrete, must be so adjusted that the fibre strain upon the metal, if of iron, shall not exceed 12,000 lbs., and if of steel, 16,000 lbs. per square inch.

SECTION 43.—Where the nature of the earth admits of it, sub-structures may be made wholly of concrete. Such concrete foundations to be made with standard cement, as prescribed in the preceding section, and shall not be less than twelve inches in thickness, and not less than 6 inches wider on each side than the bottom course of stone or brick footings resting upon it.

FOOTING COURSES FOR FOUNDATION WALLS.

SECTION 44.—Below all foundation walls, piers, columns, posts and pillars resting upon earth, rock, piles, or concrete, a base or footing course of stone or brick shall be laid; below foundation walls of buildings of the third class or the founda-

tions of buildings of the second class which do not exceed thirty-five feet in height, the footings, shall be of stone not less than eight inches in thickness, and be at least twelve inches wider than the bottom width of the wall.

In buildings of the second class exceeding thirty-five feet in height, and in all buildings of the first class, the stone footings shall be in two or more courses, proportioned to the wall which they are to carry, each course to be not less than twelve inches in thickness, and project not less than six inches on each side of the bottom of the wall, or of the course immediately above it.

SECTION 45.—If stepped up footings of brick are used in place of stone steps, or off-sets, if laid in single courses, shall each not exceed one and one-half inches, or if laid in double courses, shall not exceed three inches.

All bricks used for substructures shall be of such quality as to resist the action of frost and damp, and in all cases must be laid in Portland cement of a brand approved of by the city inspector, who may require a test to be made as provided in section 42.

SECTION 46.—Below any column or post in the basement or cellar of a building, there shall be a base stone proportioned in size to the load carried by the column or post, and below the base stone, there shall be at least one footing projecting not less than twelve inches on each side of the base stone. Should the load require it, there shall be two or more footings proportioned to the weight to be borne and the nature of the soil in which they rest.

SECTION 47.—Below all brick or stone piers there shall be footings of stone or brick, the area of which shall be proportioned to the load which the pier has to support, but in no case shall such footing have a projection of less than twelve inches on each side of said pier; the footing, if of stone, to be in two or more courses, each course projecting not less than six inches on each side beyond the course immediately above it; if the footings are in brick, they are to be stepped as described in section 45.

DAMP COURSE.

SECTION 48.—If any house or building, to be occupied partially or wholly as a dwelling, is to be erected upon any site, or portion of a site, which is damp, swampy, or which has been filled up or covered with any material impregnated or mixed with any foecal, animal, or vegetable matter, or which shall have been covered with dust, or slop, or other refuse, the whole area of said house or building shall be covered with a layer of good concrete at least four inches thick, finished smooth on the surface with cement or other impervious material.

FOUNDATION WALLS.

SECTION 49.—Foundations for external, party or internal walls, built wholly of rubble masonry, shall be thoroughly bonded together by through stones or headers, extending not less than three-fourths of the full thickness of the wall, and all the stones of said wall shall be solidly bedded, and all joints flushed up solid with mortar or cement, and the said wall shall be built straight and plumb on both sides.

SECTION 50.—Foundation walls, built of rubble masonry, for buildings of the second class to be used as dwellings, or as shops on the ground storey with dwellings over, and where the superstructure is of brick not exceeding forty feet in height, shall not be less than twenty-four (24) inches in thickness, and this thickness shall be increased four inches for each fifteen (15) feet or fraction thereof added to the height of the building.

If the superstructure is of stone not exceeding forty feet in height, the thickness of the foundation wall shall not be less than twenty-six inches, and the thickness of said foundation shall increase four inches for each fifteen feet, or fraction thereof, added to the height.

SECTION 51.—Foundation walls built of rubble masonry for buildings of the second class, intended to be used as warehouses, factories, churches, school houses and public buildings and where the superstructure, whether in stone or brick, does not exceed forty (40) feet in height, shall not be less than twenty-seven inches in thickness, the thickness to be increased four (4) inches for each additional 12 feet or fraction thereof, added to the height.

SECTION 52.—Foundation walls, when of stone, for buildings of the first class, over seventy-five (75) feet in height, shall be block stone laid in cement, the thickness and width of the same to be proportioned to the height of the building.

SECTION 53.—Foundation walls, when of stone, for buildings of the first class under seventy-five feet in height, or of the second class, where the superstructure is sixty (60) feet or over in height, shall be composed of large flat bedded stones, one-third of which shall extend the full thickness of the wall.

SECTION 54.—Foundation walls, if made of brick, shall be at least four inches greater in thickness than the wall immediately above them, and shall be built with hard burned weather proof bricks laid in Portland cement, but in no case shall such foundation wall be less than twenty (20) inches thick.

SECTION 55.—In all cases, foundation walls whether of brick or stone, shall be thick enough to resist lateral pressure, and the inspector may order an increase in thickness, or the addition of piers or buttresses to a foundation wall to resist such pressure.

SECTION 56.—In all cases where foundation walls are exposed to a flow of water, they shall be built with Portland cement, or if built with lime mortar, shall be plastered on the side exposed to water, with Portland cement or asphalt, in such manner as will render the wall impervious to water.

EXTERNAL AND PARTY WALLS.

SECTION 57.—The external walls of buildings, built either of rubble masonry or brickwork, and faced on the outside with coursers, ashler, or other cut stone, shall have coursers, ashler, or other cut stone thoroughly bonded or tied to the stone or brick backing, with bond stones or heavy metal cramps, extending to not less than three-fourths of the thickness of the wall from the face, and placed not more than three feet apart in any direction.

SECTION 58.—The minimum thickness of brick external and party walls above the foundation walls, for buildings of the first and second class, shall be as follows:—

For all buildings used as business premises, warehouses, manufacturing and public buildings:—

TABLE NO. 1.

	Basement.	Ground Floor.	1st	2	3	4	5	6	7	8	9	10
One storey.....	12	12										
Two storeys.....	16	12	12									
Three ".....	16	16	12	12								
Four ".....	20	16	12	12	12							
Five ".....	24	20	16	16	12	12						
Six ".....	24	20	20	16	16	12	12					
Seven ".....	28	24	20	20	16	16	12	12				
Eight ".....	28	24	20	20	20	16	16	16	12			
Nine ".....	28	24	24	20	20	20	16	16	16	12		
Ten ".....	32	28	24	24	20	20	20	16	16	16	12	
Eleven ".....	36	28	28	24	24	20	20	20	16	16	16	12

For buildings where the first storey is used for business purposes and the upper storeys as dwellings:—

TABLE NO. 2.

	Basement.	Ground Floor.	1st	2	3	4	5	6	7	8	9	10
Two storeys.....	16	12	8									
Three ".....	16	12	12	8								
Four ".....	20	16	12	12	12							
Five ".....	20	16	16	12	12	12						
Six ".....	20	20	16	12	12	12	12					
Seven ".....	24	20	20	16	16	12	12	12				
Eight ".....	24	24	20	20	16	16	12	12	12			
Nine ".....	28	24	20	20	20	16	16	12	12	12		
Ten ".....	28	24	24	20	20	20	16	16	12	12	12	
Eleven ".....	32	28	24	24	20	20	16	16	16	12	12	12

For buildings used as dwelling houses:—

TABLE NO. 3.

	Basement.	Ground Floor.	1	2	3	4	5	6	7
One storey.....	12	8							
Two storeys.....	16	12	8						
Three ".....	16	12	12	8					
Four ".....	16	16	12	12	12				
Five ".....	20	16	16	12	12	12			
Six ".....	20	16	16	16	12	12	12		
Seven ".....	24	20	16	16	16	12	12	12	
Eight ".....	24	20	20	16	16	16	12	12	12

SECTION 59.—The thickness of external or party walls, when built of rubble masonry, shall be seventy-five per cent. in excess of the thickness for brick walls mentioned in the preceding tables, but in no case shall a stone wall be less than twenty inches in thickness.

In any external wall built of brick and faced with stone, ashler, or courses, the said ashler or courses shall be considered as equal to four inches of brickwork, in estimating the thickness of the wall.

SECTION 60.—In all buildings, fifty feet in width in which the external walls are not buttressed or supported by brick partition walls, or by girders running at right angles to the wall and resting upon it, they shall be increased four inches in thickness greater than mentioned in the preceding tables, and for every additional fifty feet or fraction thereof in width of said building unsupported by brick partition walls or girders, there shall be an additional increase of four inches in the thickness of said wall.

SECTION 61.—External or party walls, one hundred feet or over in length, which are not strengthened by cross walls or buttresses equal in height to the wall, shall be four inches thicker than mentioned in the preceding tables.

DIVISION OF BUILDINGS BY BRICK PARTITION WALLS.

SECTION 62.—All second class buildings, hereafter built, shall be so divided by brick partition walls, of the thickness prescribed in the preceding tables, that no space inside of such building shall exceed in area ten thousand square feet; all such partition walls shall be carried not less than twelve inches above the roof at every point.

No existing wall in any second class building shall be removed so as to leave an area not enclosed with brick-walls of more than ten thousand superficial feet.

STRENGTHENING WALLS BY PIERS OR BUTTRESSES.

SECTION 63.—The external walls of business premises, manufactories, and warehouses, in which the area of the openings is equal to sixty per cent. or over of the face of the wall, and where the wall is not supported by brick cross or partition walls, at intervals of twenty-five feet or under, the same shall be reinforced by piers or buttresses, or shall be increased in thickness.

SECTION 64.—If any storey in any building of the first or second class, used as a dwelling, exceeds in height sixteen times the thickness prescribed in the preceding table No. 3, of Section 58, the thickness of such external or party wall throughout such storey, shall be increased to one sixteenth part of the height of the storey, and in buildings used for warehouses and manufactories, the increase shall be in the proportion of one-fourteenth part of the height of the storey, but such additional thickness may be confined to piers properly distributed, of which the collective widths shall amount to one fourth part of the length of the wall.

PARTY WALLS.

SECTION 65.—Every party wall shall be built through and to at least one foot above, and distant from the roof boarding at every part of roof, and shall rise to the same height above any skylight, hatch, or other construction on the roof, which is contiguous to the wall.

SECTION 66.—Every party wall shall be corbelled to the outer edge of all eaves, or other projections, with brick, stone, or other incombustible materials, in such manner as approved, and as will effectually prevent fire from being carried from one building to another, by the eaves or cornices.

SECTION 67.—In no case shall a party wall, above the ceiling of the upper storey in a dwelling house, be less than eight inches in thickness, and in warehouses, manufactories or business premises, less than twelve inches.

SECTION 68.—The top of all party or other walls, projecting above a roof, shall be covered with incombustible material.

SECTION 69.—Openings in party walls, or in partition walls described in sections Nos. 62 and 65, shall not exceed two in number in any storey, and the combined area of such opening in each floor shall not exceed one hundred and forty superficial feet.

SECTION 70.—All such openings in party or partition walls, shall be fitted with wood doors, entirely covered with bright tin, or fitted with two iron doors, one placed on each side of the wall, said doors to be made of sheet iron not less than No. 16 gauge, properly riveted to iron frames of suitable size. The said doors, whether of wood covered with tin, or wholly of iron, are to be hinged to suitable frames, firmly fixed to the wall, or they are to slide on suitable pulleys and hangers, all as prescribed by the rules of the Fire Underwriter Association.

SECTION 71.—Roof or floor timbers entering opposite sides of a party wall, shall have at least four inches of solid brickwork between the ends of said timbers.

SECTION 72.—No recess shall be made in any party wall which is only eight inches thick, and in no case shall a recess be made of more than four inches in depth in any party wall which is twelve inches thick, nor more than eight inches in depth in any wall that is sixteen inches or over in thickness.

No such recess shall be over six feet in width and in all cases such recesses must be made vertical.

Should it be necessary to make recesses of greater depth than above mentioned, or should it be necessary to make them diagonally across the wall, they can only be so made by consent of the inspector.

The aggregate area of recesses in any wall shall not exceed one-fourth of the whole area of the face of the wall, on any storey, nor shall any recess be made within a distance of 6 feet from any other one in the same wall, without the approval of the building inspector.

SECTION 73.—In all party or division walls in buildings used as business premises, manufactories, or warehouses, and in all public buildings, the walls shall be corbelled on each side not less than three inches, to receive the floor joists, said corbelling not to be less in height than four courses.

SECTION 74.—In the case of buildings expropriated by the corporation for the widening of streets, or when from any other cause it is necessary to remove one-third of the depth of any existing building, the party wall of the remaining portion of said building, if not already built in conformity with this by-law, shall be demolished throughout its whole extent, and rebuilt in compliance with the provisions of the said by-law.

And should the remaining portion of said building other than the party wall not be in accordance with this by-law, it shall be demolished, and if rebuilt it shall be built in conformity with the provisions of this by-law.

HOLLOW WALLS AND WALLS LINED WITH POROUS TERRA COTTA.

SECTION 75.—External walls may be built hollow, provided the said walls contain not less than sixteen inches in thickness of solid brick, say eight inches of solid brick on each side of an air space, or with twelve inches on the outside and four inches of solid brick work on the inside of an air space; the walls on each side of the air space are in all cases to be securely tied together with brick or metal ties, placed not more than two feet apart.

SECTION 76.—External or party walls lined on the inside with porous terra cotta shall be of the thickness prescribed by this by-law, exclusive of the thickness of the terra cotta. In all cases where a wall is lined with terra cotta, the terra cotta is to be firmly secured to the solid wall by headers of brick or terra cotta, or by iron cramps, placed not more than two feet apart.

PIERS OR COLUMNS SUPPORTING WALLS.

SECTION 77.—When any external wall or portion thereof is supported on piers, columns, or pillars, such pier, column, or pillar shall be of stone, brick, steel, iron, or other incombustible material, and of sufficient size and strength to safely carry the load upon them. Should the piers be of brick, and less than nine square feet in area, they shall be capped with a stone not less than six inches thick, or an iron plate not less than 1½ inches thick, and the full size of the piers; said piers, if over six feet in height, shall have bond stones of the full size of the pier built into them at intervals of not over three feet apart; should the piers front on a street, the bond stones may conform to the kind of stone used for the trimmings of the front.

SECTION 78.—Any column or pillar of metal, supporting an external wall or portion thereof, shall rest upon a dressed stone base not less than twelve inches thick, or upon an iron plate and stone base combined, and the said base shall be of such dimensions as will safely support the column and wall resting upon it; the said column or columns, if supporting a wall twenty inches or over in thickness, shall be either constructed double, that is, an outer and inner column, the two combined to be of sufficient strength to sustain safely the weight to be imposed thereon, or such other iron or steel column of sufficient strength, and so protected as to secure resistance to fire.

METAL COLUMNS SUPPORTING BEAMS OR INTERNAL WALLS.

SECTION 79.—Iron or steel columns supporting beams or girders, elsewhere than in external walls, shall rest upon stone blocks or iron plates of sufficient size and thickness to properly distribute the load upon the wall on which the column rests; if the load is to be distributed directly on the ground, footings of stone are to be made below the column, as provided for in section No. 46.

Cast iron columns set one above the other shall have proper flanged connections, and bolted together; all bearing parts of columns or plates shall be planed or turned to true surfaces; no

cast iron post or column of less thickness than $\frac{3}{4}$ of an inch shall be used in any building.

Cast iron posts or columns used for the support of wood or iron girders or brick walls, which are not cast open on one face shall, before being set up in place, have a hole $\frac{3}{8}$ of an inch in diameter drilled in the shaft by the manufacturer or contractor furnishing the same, to exhibit the thickness of the metal. The inspector may order additional test holes to be drilled where he may direct.

Iron posts or columns cast with one or more open sides or backs, shall have solid iron plates on top of each, to prevent the passage of fire or smoke through them from one story to another, except where pierced for the passage of pipes.

No cast or wrought iron post or column shall have an unsupported length of more than thirty times its least lateral dimension or diameter.

The maker of all steel or cast iron columns shall be obliged to stamp the same with his name and the carrying capacity of each of them.

WOOD POSTS NOT TO BE USED FOR SUPPORT OF A WALL.

SECTION 80.—In no case shall a wood post or column be used for the support of any wall in a building of the first or second class (except as a temporary support), nor shall any metal column or post rest upon a wood post or beam.

STEEL OR IRON BRESSUMER AND LINTELS.

SECTION 81.—Openings in an external wall over which a wall has to be carried, and which are too wide to be linteled with stone or spanned by an arch in brick or stone of sufficient strength to carry the superimposed load, shall be spanned by a bressumer or lintel of steel or iron, and such bressumer or lintel shall be so proportioned to the load which it has to bear, that the maximum fibre stress will not exceed 16,000 lbs. for steel or 12,000 lbs. for iron, per square inch. Steel or iron lintels used to span any opening in any external or internal wall more than ten feet in width, shall, if resting at the ends upon stone or brick walls, columns or piers, have a bearing of at least ten inches, by the thickness of the wall to be supported, and if resting upon an iron or steel post, or column, the bearing shall not be less than six inches by the thickness of the wall to be supported.

In all cases where an iron or steel bressumer or lintel is supported on brick walls or piers, it shall rest at each end upon a stone block or iron plate properly proportioned to transmit the load to the wall or pier.

WOOD FURRINGS ON WALLS.

SECTION 82.—In all buildings of the second class used for churches, schools, theatres, hotels, warehouses, manufactories or places of public assembly, external or party walls shall not be furred with wood or other combustible materials.

In all other buildings of the second class, if wood or other combustible material is used for furring on external or party walls, the stone or brick of which these walls are composed, shall, immediately above each tier of joists, project from the face of the wall equal to the projection of the furring for a height of at least ten inches above the joists, and the course of brick immediately below the under side of the floor joists shall also project the thickness of the furring.

WOOD LINTELS OR BRESSUMERS NOT ALLOWED IN EXTERNAL WALLS.

SECTION 83.—No wood lintel or bressumer shall be used to span any opening in an external wall of a second class building over which a wall has to be carried, except as herein below provided.

Wood lintels may be used to span the inside of an opening in an external wall of a second class building, provided that the opening is not over five feet in width, and that the lintel has a depth of $1\frac{1}{4}$ -inch for each foot in width of the opening. Wood lintels shall not be used to span the inside of openings in external walls, if such openings are placed so close together as not to admit of at least 12 inches in width of stone or brick being between the ends of the lintels.

Wood lintels may be used to span openings in internal walls (except party walls), over which a wall has to be carried, provided that the opening does not exceed six feet in span, and that the lintel is $1\frac{1}{4}$ -inch in depth for each foot in width of the opening, by the thickness of the wall to be supported.

Wherever practicable, relieving arches in brick or stone are to be turned over wood lintels.

CHIMNEYS.

SECTION 84.—All chimneys and smoke flues shall be built of stone, brick or other incombustible material.

Smoke flues built of brick shall not be less than one hundred

and twenty-eight square inches in area, and the walls around the flue shall not be less than eight inches thick, except that the wall between one flue and another may be four inches thick.

Smoke flues lined on the interior with fire clay pipes shall, if in brickwork, be surrounded by walls not less than four inches thick at any point, and if in stonework, by walls not less than eight inches thick; the internal diameter of such flue lining shall not be less than nine inches.

Smoke flues, if made in stonework, shall be lined on the inside with brickwork four inches thick, or with fire clay pipe linings.

The top of any chimney shall not be less above the roof of the building of which it forms part, than four feet, if said roof is a flat roof, and not less than two feet above the ridge of the roof, if said roof is pitched.

The top of every chimney shall be covered with iron, stone or other incombustible material, and said covering shall be securely fastened to the chimney.

No chimney shall be corbelled more than four inches from a wall twelve inches thick, nor more than eight inches from a wall sixteen inches or over in thickness; no chimney or flue shall be corbelled from a wall eight inches thick.

Chimneys may rest upon steel or iron beams, provided the said beams are properly supported on stone or brick walls, or piers, or on iron columns, and that the fibre strain upon the iron or steel beams does not exceed the limit mentioned in section 81 of this by-law.

In no case shall a chimney or smoke flue rest upon, or be supported by wood.

Any chimney, not forming part of a wall of a building, shall rest upon the ground on proper foundations, proportioned to the size and height of a chimney.

Any chimney with a flue of greater area than 400, and less than 784 square inches, which is connected with the external party or brick partition wall, and which does not exceed seventy feet in height, shall have walls not less than twelve inches thick for a height of fifty feet; the balance of the height may be eight inches thick.

If the height of the flue exceeds seventy feet, the first twenty-five feet in height shall have walls not less than sixteen inches thick; the balance of the height may be twelve and eight inches, as above described.

If the said flue is used in connection with a steam boiler or a furnace, which heats it to a high temperature, it shall be lined from the bottom of the entrance of the smoke flue, and for a height of not less than fifteen feet above the same, with fire brick.

Any chimney having a flue of 784 square inches or over in area, and whether connected with the walls of a building, or isolated therefrom, shall have hollow walls for a height of not less than two-thirds of the whole height of the chimney, and they shall be designed and constructed so that the stress due to the weight of the stack, and from wind pressure, shall not exceed the limit fixed by this by-law, as the maximum stress to be allowed for brickwork; the said flue shall be lined with fire brick for a height proportioned to the whole height of the chimney, and to the heat it has to endure, but in no case shall the height of said fire brick be less than twenty-five feet, the lining of fire brick to be independent of the walls of chimney.

The foundations for chimneys of the size above mentioned shall be built in conformity with the provisions of this by-law respecting foundations.

No metallic chimney, not enclosed in brick work and used in connection with a steam boiler or a furnace which heats the flue to a high temperature, shall be erected, unless it is entirely isolated from any woodwork, and then only with the consent of and in the manner prescribed by the inspector, and the inside of said flue shall be lined with fire brick to such height as directed by the inspector.

The proprietor of any house or building hereafter to be erected in this city, the chimney of which shall not be more than one foot horizontally distant from any other building having a higher elevation, shall be bound at his own expense to raise the height of such chimney to be erected, as aforesaid, above apex or roof of the said house or building, but in the event of the lower building having been constructed previously to the more elevated one, then the proprietor of the more elevated building shall, at his own expense, and with due diligence, raise the said chimney of the lower building to the height of his own chimney, or incorporate the flues in his own wall.

CHIMNEYS EMITTING SMOKE DECLARED A NUISANCE.

SECTION 85.—Any chimney emitting smoke so as to cause damage to or injuriously affect neighboring properties or the oc-

cupants of the same, shall be deemed a nuisance, and any person who shall commit such nuisance, or permit the same to be committed, or shall neglect or refuse to abate the nuisance after being notified to do so, shall be liable for the penalty prescribed in section 169 of this by-law.

HEARTHES AND FIRE PLACES.

SECTION 86.—The hearths of all fire places in buildings of the second and third class shall be supported on trimmer arches of brick or terra cotta, said arches to be not less than four inches thick, and having the crown of the arch not less than two inches below the level of the floor.

Or the hearths of said fire places may be supported on iron bars, placed between and firmly secured to the wood floor joists and trimmers, the top of said bars to be not less than six inches below the level of the floor; on these bars not less than two courses of brick or terra cotta or concrete shall be laid, in mortar or cement, and the joists in the same thoroughly flushed with mortar or cement.

The hearths of fire places, whether of marble, slate, stone or tile, shall be laid upon the trimmer arches or brickwork or cement before described in cement.

All hearths and trimmer arches or brick foundations for hearths of fire places shall be at least twelve inches larger, on each side than the width of the fire place opening and shall be at least eighteen inches wide in front of the chimney breast.

The jambs and backs of all fire places, whether using coal, wood, or gas, as fuel, shall be at least eight inches thick of brickwork; the brickwork over the fire place opening, shall be arched and supported on a cambered iron bar. Fire place openings that are not used, but which have smoke pipes entering into flue of same above the opening, must be closed by means of an iron damper in the throat of fire place opening securely fixed.

The flue from a fire place in which gas only is used as fuel, may be a cast iron or fire clay pipe not less than four inches internal diameter, and such pipe shall be carried out to above the roof, and shall be incased in brickwork not less than four inches thick. If this pipe is not imbedded in a stone or brick or terra cotta wall, then the pipe must be properly encased with asbestos.

HEARTHES BELOW STEAM BOILERS, FURNACES AND RANGES.

SECTION 87.—No steam boiler or furnace for manufacturing purposes, or any range, stove, oven, or boiler used for cooking in a hotel, restaurant, or club house, shall be placed on any floor above the cellar unless the same is set upon steel or iron beams and brick or terra cotta arches, and shall have a hearth of brick or terra cotta laid in cement; said hearth shall extend in front of said range, stove or oven, for a distance of not less than two feet, and at sides and back not less than one foot.

In no case shall such boiler, furnace, range, stove or oven, be used until the same shall have been examined and approved by the inspector, and a certificate obtained.

Any wood floor below a hot water furnace shall be protected by a hearth of brickwork laid in cement or mortar, and said hearth shall extend in front, sides and back of the furnace at least eighteen inches.

COOKING OR HEATING STOVES.

SECTION 88.—Cooking or heating stoves shall be kept clear of any woodwork at least eight inches, unless the woodwork is protected by bright metal shields, in which case the distance shall not be less than six inches. Below all such stoves resting on wood floors there shall be a metal plate, and said plate shall project in front of and all around the stove at least twelve inches.

SMOKE PIPES.

SECTION 89.—No smoke pipe shall project through any external wall or window or roof.

No smoke pipe shall pass through a wood or stud partition, except through a metal ring, built around with brickwork or terra cotta, for a distance of not less than four inches from said ring, or through a double metal collar of the same thickness as the partition, the said collar to have a ventilated air space of not less than two inches around the pipe.

No smoke pipe shall be placed nearer to any woodwork than eight inches, unless such wood is plastered or covered with tin. If the wood, in addition to the plastering, is protected by a metal shield placed two inches distant from the wood, the smoke pipe may be placed within six inches of the wood.

No smoke pipe shall pass through a wooden floor except in a double metal collar, extending the full depth of the joists, floor and ceiling, said collar to have a ventilated air space of not less than two inches around the pipe, and be fitted at the floor and ceiling with metal flanges.

Any smoke pipe from a steam boiler or from a furnace in which the flue is heated to a high temperature shall be kept clear of any woodwork at least twenty inches, and such woodwork must be protected by metal shields in such manner as will render it safe from fire. If the pipe is covered with "asbestos" or other good non-conductor, or if it is made double, with a space of at least one inch between the metal of the two pipes, it may be placed within twelve inches of woodwork, subject to the approval of the inspector.

HOT AIR FURNACES.

SECTION 90.—Hot air furnaces, whether enclosed in brickwork or by metal casings, shall, unless resting directly upon the ground, rest upon hearths not less than four inches thick, made of stone or brick, laid in cement or mortar, and said hearths shall extend not less than two feet in front of the furnace.

Hot air furnaces shall be placed at least eighteen inches from any wooden partition, or from a wood or plaster ceiling, unless the partition or ceiling is protected by a metal shield, in which case the distance shall not be less than one foot.

Cold air boxes connecting with a hot air furnace shall be made of metal for a distance of not less than three feet from the furnace.

Pipes for conveying heated air from a hot air furnace shall be made of bright tin. No hot air pipe shall be carried above the level of the ground floor of any building, unless the same be encased in brickwork or terra cotta not less than four inches thick.

No pipe from a hot air furnace shall pass through a wood or stud partition, except in a metal ring, surrounded with brickwork or other incombustible material, or in a double metal collar as described in section 89.

The openings in floors for hot air registers shall be surrounded with borders of incombustible materials not less than two inches wide, and firmly and securely set in place, and bedded in plaster of Paris.

The register boxes shall be of metal and double, and the space between the two thicknesses of metal shall not be less than one inch.

PIPES AND REGISTERS FOR WARM AIR OF MODERATE TEMPERATURE.

Where air is heated by contact with steam or hot water pipes, or in a furnace which does not heat the air over 100 degrees Fahrenheit, the air may be carried in pipes made of other metal than tin, and the double metal register boxes described in the preceding section may be omitted. Should such pipes pass through a wood or stud partition, they are to be kept clear of the woodwork at least two inches. Hot air furnaces and pipes, registers, etc., in connection with same for heating purposes in dwelling houses or other buildings, shall be so constructed as to avoid any danger of fire, and shall not be used until the inspector's certificate shall have been obtained.

SECTION 91.—All metal pipes conveying steam which have to pass through a wood floor or partition, shall only do so in a metal sleeve or thimble, and there shall be a space of one quarter of an inch between the pipe and thimble.

Steam pipes passing through joists or other timbers shall only do so in a metal sleeve or thimble, and there shall be a space of at least one-fourth of an inch between the pipe and thimble.

SECTION 92.—If a steam pipe passes nearer to a joist or other timber than two inches, the said timber shall be protected by a metal shield or casing, but in no case shall the pipe be nearer to the wood than one-half inch.

FLOORS.

SECTION 93.—The floors in all buildings hereafter erected, or floors in existing buildings which may be renewed, shall be so constructed as to carry safely the weight to which the proposed use of the building will subject them, but the least capacity per superficial square foot, exclusive of the materials in the floor, shall be as follows: For floors of dwellings, 70 pounds; for floors of offices, 100 pounds; for places of public assembly and schools, 125 pounds; warehouses, stores, factories, or buildings for any other manufacturing or commercial purposes, 150 and upwards, according to the use for which they are intended.

STRENGTH OF FLOORS TO BE CALCULATED.

In all warehouses, storehouses, factories, workshops and stores, where heavy materials are kept or stored, or machinery introduced, the weight that each floor will safely sustain upon each superficial foot thereof, shall, within ninety days after the passage of this by-law, be estimated by a competent person employed by the owner or occupant. But if the inspector shall have cause to doubt the correctness of said estimate, he is empowered to revise and correct the same, and for the purpose of each revision, he and

the assistant inspectors may enter any building, and the owner or occupant must remove so much of any floor or other portion thereof as may be required to make necessary measurements and examination.

When the correct estimate of the weight that the floors in any such building will safely sustain, has been ascertained as herein provided, the inspector shall approve the same, and thereupon the owner or occupant of said building, or any portion thereof, shall post a copy of such approved estimate in a conspicuous place on each storey of the building to which it relates.

Before any building hereafter erected is occupied and used, in whole or in part, for any of the purposes aforesaid, and before any building erected prior to the passage of this by-law, but not at such time occupied for any of the aforesaid purposes, the weight that each floor will safely sustain upon each superficial foot thereof, shall be ascertained and posted as hereinbefore required.

No floor joists shall be supported wholly upon wooden partitions, but every joist, except trimmers, shall rest at one end for at least four inches on a wall, or on a girder or beam of suitable size. Trimmers over 4 feet in length, when used in floors calculated to carry 150 lbs. or over per superficial foot, shall be supported in stirrup irons. When the supporting wall is hollow with a 4" inner lining, the ends of joists must rest not less than 4" on the solid or outer portion of the wall.

All ends of wood in floor and roof joists and beams shall be cut to a level of 3" on their depth.

CUTTING TIMBERS FOR PASSAGE OF PIPES.

SECTION 94.—Cutting of joists or other timbers for the passage of pipes, or other purposes, shall not be done so as to reduce the strength of said timber below that required by the provisions of this by-law.

Each floor of second class buildings shall have its beams or joists so tied to the external walls, by wrought iron straps, of not less than 1½ in. wide by ¾ of an inch thick, placed at not over ten feet apart, and so arranged as to thoroughly tie the walls to the floors.

Where joists or beams do not extend in one piece from wall to wall across, or the depth of a building, they are to be spiked together where the ends lap on each other, or they are to be joined with iron straps not less than the size mentioned in the preceding paragraph, so as to form continuous ties, across or lengthwise of the building, at intervals of not more than ten feet apart.

FLOOR TIMBERS OR STUDDING NEAR FLUES.

SECTION 95.—No floor or roof timber shall be placed closer to any smoke flue than nine inches.

No studding or furring shall be placed within one inch from the outside face of brickwork surrounding any smoke flue.

COVERING AND CONSTRUCTION OF ROOFS.

SECTION 96.—The roof of every building hereafter erected shall be covered with incombustible materials such as tin, iron, slate, copper, gravel, composition, or like substantial roofing material, approved by the inspector.

All new or renewed roofs having a pitch of 30 degrees or over shall be so constructed as to bear safely in addition to the weight of materials a load of 30 lbs. per superficial foot on the surface of said roof, also to resist a horizontal wind pressure of 30 lbs. per foot, in addition to the load above mentioned.

All flat roofs, and roofs having a less pitch than 30 degrees, shall be constructed to bear safely a load of not less than sixty lbs. per superficial foot, in addition to the weight of materials.

Every flat roof shall have a scuttle or bulkhead for access thereto, and the same shall be covered with incombustible materials. In warehouses and factories there shall be a strong iron fixed ladder or stair for access to the scuttle or bulkhead.

SECTION 97.—No saw dust or mill shavings shall be used as a deafening for any floor or roof, except in ice houses and refrigerators.

CORNICES, GUTTERS AND CONDUCTORS.

SECTION 98.—Exterior cornices shall be made of incombustible materials, and in all cases the stone or brick walls behind the cornice shall be carried up solid to the under side of the roof boarding; the said cornice, if made of metal, shall be firmly secured to the walls by iron anchors independent of any wood work.

Where the cornice projects above the roof, the wall shall be carried up to the top of the cornice a minimum thickness of eight inches, and to be covered with incombustible materials.

All existing exterior wooden cornices, which are unsafe or rotten, shall be taken down, or if they are damaged by fire to the extent of one third they shall be taken down, and if replaced they shall be constructed of incombustible materials as above described.

When a wall is finished with a cornice of stone, brick or other heavy materials, the greater weight of material in such cornice shall be on the

inside of the outside face of the wall, and shall be strongly anchored with metal anchors to the wall.

Any building built on or within three feet of the street line, must shed the water towards the center or rear of the building, or a steep mansard roof may be used, provided the slope is not more than the thickness of the wall and the projection of cornice combined, and must not have any gutters or conductors.

STANDS FOR OBSERVATION.

SECTION 99.—No staging or stand for observation purposes, shall be constructed or occupied upon the roof of any building.

The roof of any building shall not be used as a garden, music stand, or place of public assembly, without the consent of the inspector, and any stand, platform or other structure erected upon a roof shall be made under his instructions.

INSPECTION OF STANDS FOR OBSERVATIONS.

All stands for observation for the public use, either of a temporary or permanent nature, before erection, must have the plans for same submitted to the inspector for his approval, and a permit for same must be obtained. Before being used, said stands must be examined by the inspector, and if found satisfactory, he is to issue a certificate to that effect.

All arches, or similar constructions, erected on any public street or square, must be inspected by the building inspector before being used, and his certificate obtained.

IRON AND FIREPROOF SHUTTERS.

SECTION 100.—Every building which is more than three storeys high above the curb level, occupied for manufacturing or warehousing, shall have doors, blinds or shutters made of iron hung to iron hanging frames, or to iron eyes built into the wall, on every window or other opening above the first storey thereof, excepting on openings fronting on a street twenty feet or over in width, or where no other buildings are within twenty feet.

The fastenings are to be of such character as will allow the shutters to be opened from the outside by firemen. The above requirement shall apply to any opening in any building, which opening is above and within fifteen feet of the roof of another building, or within twenty feet of another opening in an opposite wall, or in a wall the outside face of which diverges at an angle of less than one hundred and twenty-five degrees from the outside face of the wall in which the opening is.

All occupants of the building shall close the said shutters, doors, and blinds at the close of the business of each day.

PROJECTING WINDOWS AND GALLERIES.

SECTION 101.—No bay window or similar structure shall be placed upon any building so as to project over any street, lane or square without the consent of the inspector, but in no case shall such window or structure project more than two feet beyond the street line, and be at least twelve feet above the level of the pavement, nor shall the area of the window or structure projecting over the street line be more than fifteen superficial feet, nor shall there be more than one such projection for each twenty feet of street frontage.

Any balcony or gallery projecting over the line of a square or street, shall be made of or covered with incombustible materials, and shall not project beyond the line of square or street more than three feet, and be at a height above the pavement of not less than twelve feet, and so constructed as to prevent water dropping on the sidewalk.

A balcony or gallery projecting over a common lane, and attached to a building which is under forty-five feet in height from the level of the lane to the top of the wall, may be made of wood, provided that the said balcony or gallery is made open, and does not project more than three feet over the lane, if the lane is sixteen feet or over in width, nor more than two feet if the lane is under sixteen feet in width, nor shall such balcony or gallery be less than twelve feet above the level of the lane.

If a building next a common lane to which an overhanging balcony or gallery is attached is forty-five feet or over in height, from the level of the lane to the top of the wall, then the said balcony or gallery shall be constructed or covered with incombustible material.

The provisions contained in the preceding section are not to be construed as conferring any legal right to any owner whose property abuts on a lane to make windows, balconies or galleries to project over the line of the lane, to the prejudice, or against the rights or privileges of other owners in the use of said lane.

Galleries constructed of wood may be attached to the front, rear or side walls of a building of the second or third class, except where the said walls abut on the line of a street, square or lane, provided:—

1st.—That the said gallery is not enclosed except with a balustrade or open trellis work;

2nd.—That no gallery shall be of greater continuous length than 35 feet;

3rd.—That the end or ends of the gallery shall be kept at least two

feet distant from an adjoining property, or if carried to the line of an adjoining property, it shall be separated from the said property by a solid brick party wall, the said wall to extend to the outside of the gallery and be carried at least one foot above the roof of the gallery, or if the gallery has no roof, to not less than six feet high above the floor of the gallery, the said wall to be not less than eight inches thick for a height not exceeding 30 feet, if over 30 feet high the first storey of the wall to be twelve inches thick.

Stairs leading from the gallery to the ground, or to an outbuilding, or from one gallery to another, shall be open, or they may be enclosed, provided that the enclosure, in all buildings of the second and third class, shall be made of solid brick not less than eight inches thick, resting on stone foundations, or if made of wood, shall have the said enclosure cased with brickwork, four inches thick, or covered with corrugated iron.

FREIGHT AND PASSENGER ELEVATORS AND DUMB WAITERS.

SECTION 102.—In any building of the second class in which there is a hoist or freight elevator not enclosed in walls made of fireproof material, the openings in each floor for said hoist or elevator, shall be fitted with substantial doors arranged and made to open and close automatically as the hoist ascends or descends.

Freight hoists or elevators in buildings of the second class, when placed, in inclosures, shall have the enclosure made of solid brick not less than eight inches thick, or with an iron frame covered with metallic lathing and plastered on both sides, or be made of such other fire proof material and form of construction, as may be approved by the inspector; the walls of said enclosure shall extend at least three feet above the roof and be covered with a skylight of suitable size; should the elevator not extend the whole height of the building, the top of the shaft shall be covered with incombustible materials, and from the elevator shaft to the several floors shall be fitted with fireproof doors, which shall be kept closed when the elevator is not in use. In addition to the fireproof doors above described, each opening shall be fitted with a light metal or wire work door for a height of not less than five feet above the floor, and the said doors are to be arranged to open and close automatically as the car or cage ascends and descends.

Passenger elevators in buildings of the second class which are hereafter erected, and which are not placed in fire proof inclosures as in the preceding paragraph, may be placed in well holes of stairs or in hall ways, provided that the walls of the said staircase or hallway are made of brick, and that the stairs are made of incombustible materials and that the guide posts of the elevator are of iron.

Passenger elevators may be placed in any stair well, hall or court of any building erected prior to the adoption of this by-law, provided that a permit to do is obtained from the inspector, and that if the building is over four storeys in height, the guide posts and enclosures of said elevator are made of incombustible material.

Overhead elevator or machinery either for freight or passengers, shall have underneath it a grille or metal netting sufficient to protect the car from falling material; all cars used for passengers shall be enclosed with wood or metal, except the door opening.

No freight or passenger elevator, or hoist, erected after the passing of this by-law, shall be used until it has been inspected and approved in writing by the inspector.

All freight and passenger elevators shall, after the passing of this by-law, be examined by the inspector or by some elevator builder approved of by the inspector, not less than once in six months, and if the said elevator be safe and in good working order, a certificate to that effect, stating the date of the inspection and signed by the party making the inspection, shall be posted in the car, or at the entrance of the elevator, and any owner or occupant using or allowing to be used an elevator without a certificate of safety being thereto attached, shall be liable to a fine of ten dollars for each and every day the elevator is so used.

Passenger elevators in warehouses which are not placed in fire proof enclosures, shall have the opening in each floor through which the car passes, fitted with substantial doors, arranged to open and close automatically as the car ascends or descends, and shall have around such opening in each floor, a metal or wood enclosure not less than five feet in height above the floor, and said enclosure shall be fitted with doors opening to the hoist which are opened or shut on the inside only.

All cars, whether of freight or passenger elevators, shall be suspended by wire ropes of ample strength to safely carry the heaviest load that may be imposed on them, and all cars or cages shall be fitted with safety wedges or other devices approved of by the inspector, that will prevent the descent of the car in case the ropes should break.

All dumb waiters in self-contained houses, if of wood, must be lined

with bright tin inside. All other dumb waiters, used for more than three storeys in any building, must be surrounded by solid brick walls and furnished with fire proof doors.

(To be continued.)

A charter of incorporation has been granted to the Finch Wood Preservative Co., of Toronto; capital, \$20,000.

The opening ceremonies in connection with St. Andrew's Presbyterian church, Sandon, B.C., took place on the 12th and 13th inst. Mr. J. W. Balmain, C.E., is the architect of the building.

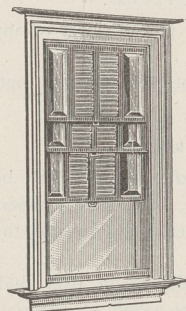
Messrs. Seaman, Kent & Co., manufacturers of rolling partitions, wood window blinds, &c., have just removed to their new factory and offices, No. 1139 to 1141 King street west, Toronto.

The Luxfer Prism Company, Limited, of Toronto, have recently removed to their new offices at 98 and 100 King street west. These offices have been specially fitted up to meet the requirements of the company's business. In the rear of the offices is their new factory.

The Canada Foundry Company has been granted a charter of incorporation with an authorized capital of \$1,000,000, to establish in Toronto a foundry for the production of structural and ornamental architectural iron and cast iron work of all kinds. The company is composed of Messrs. E. B. Osler, M.P., W. R. Brock, W. D. Mathews, Wm. Hendrie of Hamilton, Fred Nicholls, T. W. Horn and W. H. Winslow of the Chicago firm of Winslow Bros. It is said to be the intention of the company, at a later date, to also establish a foundry in the western part of Canada.



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